Culture clash

Nelly Jefferson eases transition for foreign workers. 61

T- t- tax time

Internet traffic soars on IRS, financial Web sites. 2

Patriotic duty

Peter Keen: Private sector must help cure Feds' year 2000 woes.

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
April 13, 1998 • Vol. 32 • No. 15 • 118 pages • $4/Copy

Microsoft blinks

▸ *Changes contract proviso favoring its browser*

By Carol Sliwa

COOL SPRING breezes are getting ever warmer in Washington — both Redmond and D.C. — as activity heats up on the antitrust front.

Mindful of two rapidly approaching dates, an April 21 court hearing and final release of Windows 98, the U.S. Department of Justice and Microsoft Corp. met last Friday behind closed doors to hash out their differences. Microsoft said the talks went well.

Microsoft arrived at the negotiating table with concessions in hand. The software company late last week announced that it had freed more than two dozen U.S.-based content providers and several hundred worldwide from contract provisions that require them to promote and distribute its Internet browser exclusively.

"We believe that we would have won hands-down on the law, but we chose to waive these provisions voluntarily because our competitors were misrepresenting them," a

Microsoft, page 16

Some proposals for reining in Microsoft

- Ban intentional crippling of competing products
- Allow OEMs to interrupt the "boot-up" sequence
- Allow Web content providers to promote products and services from competing vendors

TITANIC TANGLE

"We will be so diversified . . . that we will be able to withstand [future market] storms."

– TRAVELERS' SANFORD I. WEILL ON SHARING THE CHAIRMANSHIP

"The customer doesn't want to shop [for financial services] from place to place."

– CITICORP CHAIRMAN JOHN REED

PHOTOS BY THE ASSOCIATED PRESS

▸ *Integration thorns may puncture Citigroup's plans*

By Thomas Hoffman and Kim S. Nash

THE $76.7 BILLION megamerger designed to turn Citicorp and The Travelers Group into a financial services supermarket looks great on paper.

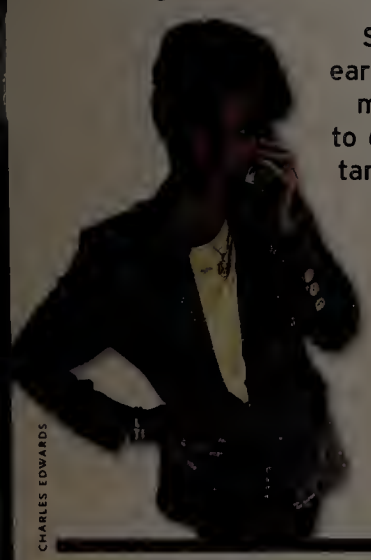
But scratch the surface and it becomes clear its architects must first chart a course littered with technical and political icebergs.

For example, making the merged entity into a one-stop shopping experience will require tight systems integration to leverage each company's respective customer databases.

Citicorp and Travelers executives have yet to outline the plan for mak-

Citigroup, 94

They're making HOW MUCH?!



CHARLES EDWARDS

Senior partners at IT consulting firms earn salaries of up to **$225,000**, not to mention **$25,000** bonuses, according to *Computerworld*'s survey of IT consultant compensation. Junior partners can get a not-too-shabby **$120,000** – far more than most corporate technology professionals and as much as most CIO clients are earning. The top "rainmakers" can make an astronomical **$600,000** per year. If you're considering a plunge into IT consulting, here's what you can expect to pull in.

IT Careers, page 70

Chicken chain takes peck at Win CE systems

By Kim Girard

CHICK-FIL-A, INC., a player in the fiercely competitive fast-food market, is gambling with technology: It is one of the first chains to try swapping cash registers for Windows CE-based thin clients.

"We're at a transition because the old technology is not working for us," said Jon Bridges, vice president of information technology at Atlanta-based Chick-Fil-A, the nation's fourth-largest chicken chain, with 750 stores in 38 states.

For example, branch managers for Chick-Fil-A can't change menus on the fly with its Par Microsystems, Inc. registers, which use decade-old technology. Managers can't easily offer limited specials, track

Chicken, page 17

Forget ROI – just install it

By Randy Weston and Craig Stedman

USERS WHO install enterprise resource planning systems are finding that ROI doesn't necessarily spell C-A-S-H.

Some ERP buyers are forgoing hard-dollar return-on-investment calculations or ignoring the results and simply trusting in the software to cure their business ills.

More than a half-dozen users contacted by *Computerworld* last week said they are counting on getting less-tangible benefits such as tightly integrated business processes, more user-friendly systems and the ability to turn off their ramshackle

ROI, page 14

By Tim Ouellette **Short on staff, long on stress.** That's the situation in many **information systems** departments because of the **IT skills shortage.** More work is **being dumped** on **shorthanded staffs,** which are trying to keep up with **new technology** while juggling **multiple projects.** In fact, 77% of **information technology workers** said the

Stress, page 14

NEWSPAPER

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MMX intel inside pentium II

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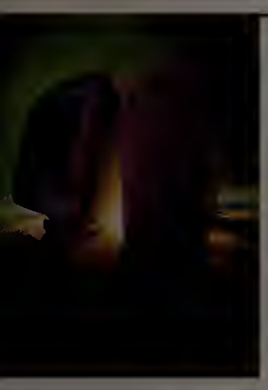

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UP FRONT

Lost in space

Microsoft is looking as if it's lost in space these days. The Justice Department is getting serious about filing antitrust charges, state attorneys general are threatening, and Microsoft is increasingly acting like a guilty party.

Each new ominous message out of Washington or the states seems to trigger a nip here and a tuck there to Microsoft's business practices. Last month, the company loosened contract restrictions on Internet service providers just as Senate hearings were about to convene. Then, last week, Microsoft told online content providers that they can ease up on promoting Internet Explorer on their sites. Coincidentally, Justice officials said they have damning new documents indicating a Microsoft campaign against Netscape.

Microsoft is increasingly acting like a guilty party.

Users are watching their corporate desktop partner and wondering what's going on. Microsoft isn't helping any with its schizophrenic public posture.

On the one hand, there's Bill Gates' "C'mon, guys!" incredulity that anyone could possibly see the software industry as uncompetitive. On the other, Microsoft sent a former Justice official on the road a couple of weeks ago to explain the minutia of antitrust law. Hey, if there's no case, why dissect it in such detail?

The upshot is Microsoft increasingly looks like the family dog that's been caught chewing the holiday roast on the brand-new carpet. If Microsoft is going to fight the feds to the death, then say that. If it intends to strike a kinder, gentler pose, then show it. Right now, Microsoft is doing both. And customers are wondering what that means to the future of their strategic software supplier.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

BY RICH TENNANT

E-Mail Rich Tennant at theswave@tiac.net

Filers flock to the Web as tax deadline looms

▸ Taxpayers look for quick advice, forms

By Sharon Machlis

THERE MAY BE no better time to entice consumers onto the 'net than when they're desperate.

So as the April 15 tax filing deadline approaches, traffic on financial sites is soaring — a sign that people are increasingly willing to turn to the World Wide Web at crunch time, industry watchers said.

Boston-based Fidelity Investments has seen "at least a four-fold increase" in the past 30 days for tax and individual retirement account areas of its Web site, according to Stephen Kileen, a senior vice president. "It's a major area where people are flooding [into] to get their information. . . . Our customers are telling us they love the Internet."

When Yahoo, Inc. hosted an online tax chat recently, "about a hundred people were lined up when the doors opened," said Rusty Wallower, manager of tax training and information delivery at H&R Block, Inc. and the featured expert at the event. "There was much, much more activity than we could handle."

Some 500 queries were fired off from a group of 700 participants in less than an hour.

Taxpayers can go to sites such as SecureTax for tax information and filing returns online

COMFORT ZONE

Those in the industry said several factors are driving taxpayers onto the Internet. For one, more households are online — 23% in January vs. 17% a year earlier, according to Odyssey, a market research firm in San Francisco. Also, consumers are more comfortable with the 'net and need information about this year's complicated tax law changes.

Users are surfing the Web for information about new tax laws and downloading tax forms, opening tax-deferred retirement accounts and even filing their returns (although the Internal Revenue Service doesn't accept forms on the Web, some private software companies do).

"We are seeing about double the interest in online tax preparation" compared with last year, said Barry Saik, senior product manager for Intuit, Inc.'s TurboTax Online (*www.turbotax. com*).

Universal Tax Systems, Inc.'s SecureTax (*www.securetax.com*) site prepared and filed about 150,000 returns through early April, compared with 60,000 for all of last year, according to company spokeswoman Naomi Williams.

COMPARISON SHOP

A number of brokerage sites have put up IRA comparison software to let investors see the tax implications of each, depending on their situations. "The application [for an IRA account] is one click away," Kileen said.

Naturally, government tax sites are also seeing a major spike in usage. Traffic at the Internal Revenue Service site (*www.irs.gov*) has tripled from a year ago, with file downloads (tax forms and instructions) hitting more than 15 million from January through early April, said Linda Wallace, chief of electronic information services.

Overall last year, 6% of all paper forms mailed into the IRS were downloaded from the Web. "This year, we expect that to grow dramatically," she said. It costs about $3 per call, including toll-free phone charges, when someone calls in to request a form be mailed to them. On the Web, Wallace estimated, a file download costs the government less than a penny.

State revenue departments also report more taxpayers surfing for forms. "Right now, we're in the process of adding a second T1 line because we've essentially filled up the first one," said Mike Klemens, spokesman for the Illinois Department of Revenue in Springfield.

However, offsetting that has been a drop in workload at the call center where forms are sent out — no extra workers were assigned there this year, Klemens said.

Next year, the department plans to launch a pilot program for filing tax returns over the Web, he said, with the hope of making it more widespread the year after.

"That will be a huge savings for us," he said. "We just choke on a big flow of paper here." □

MOREONLINE

@Computerworld's research links to tax resources on the Web can be found at *www.computerworld.com/links/* under "The tax man cometh."

Gender GAP

U.S. Rep. Constance Morella introduces bill aimed at getting more women into IT

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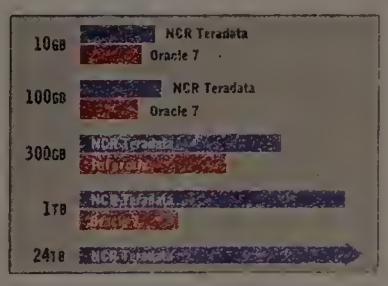

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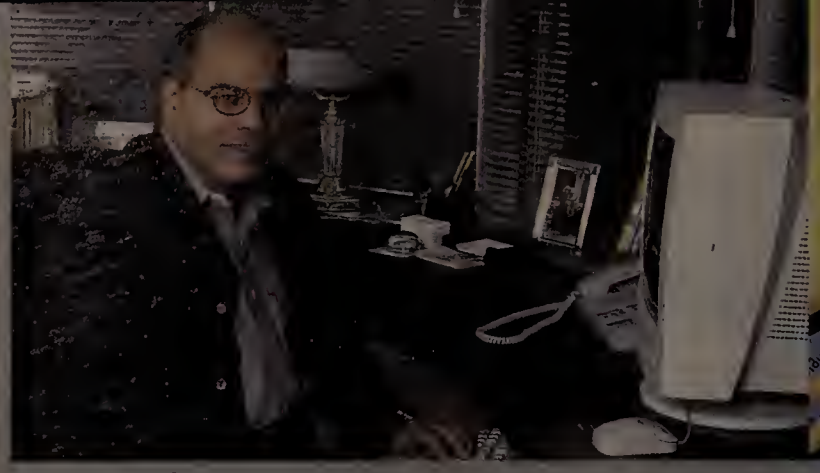
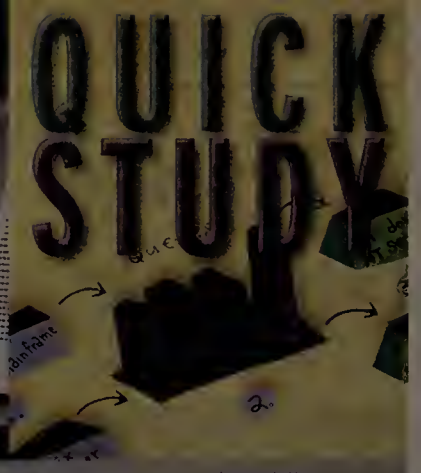


After successful CIO gigs at Burger King and PepsiCo, Honorio Padron is bringing his business-savvy tech strategy to CompUSA. **Corporate Strategies, page 37**



Message-oriented middleware: Build it in-house or buy it off the shelf? **QuickStudy, page 29**

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ETC.

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IBM's UVM gives Java a translator

▸ *Product targets integration; users applaud move*

By Sharon Gaudin

JAVA IS GETTING a cross-platform little brother.

IBM has come out with a Universal Virtual Machine (UVM) that lets developers build platform-independent applications with languages other than Java, an IBM spokeswoman said.

The company has been using the UVM in its VisualAge for Java application development tool since last September. IBM now plans to drop the technology into VisualAge for Smalltalk.

UNIVERSAL EXPECTATIONS

- IBM last summer said it was designing the Universal Virtual Machine (UVM) with a September release date
- In September, the company backed off, saying it had overzealous expectations
- That same month, IBM embedded the UVM in a new version of VisualAge for Java
- IBM will embed UVM in VisualAge for Smalltalk. The UVM won't be sold separately but will be part of the VisualAge tools

IBM said it is considering making a new version of VisualAge for C++ that includes the UVM.

Users and industry watchers said the introduction of UVM-based development tools plays into an ongoing conflict that pits cross-platform initiatives by IBM and Sun Microsystems, Inc. against Microsoft Corp.

For example, the latest version of Microsoft's Visual J++ development tool ties Java applications to Windows [CW, March 23].

The introduction of UVM-based development tools plays into an ongoing conflict pitting cross-platform initiatives by IBM and Sun against Microsoft.

IBM's UVM "would make our lives much easier because it would let us more easily integrate our Smalltalk and Java applications," said C. F. Wong, a systems specialist at the Bank of Montreal.

"Right now, we have difficulty doing that. Better integration would give us better quality software, improve our customer response time and increase customer satisfaction. That's what I'm looking for," Wong said.

A virtual machine translates an application's language into code that an operating system can understand. A Java virtual machine translates the Java language into code that can be read by various operating systems, whether it is a Unix version, Microsoft's Windows or Apple Computer, Inc.'s Mac OS. IBM's UVM was designed to make it so that programs written in Java and Smalltalk will work on any computer's operating system.

CONVENIENCE, FIRST

Karen Boucher, vice president of The Standish Group International, Inc. in Dennis, Mass., said IBM's move "will be great for developers who already know Smalltalk and now don't need to be retrained to be able to write cross-platform applications."

"The vision is to have developers use whatever language they want. And it's a compliment to Java because the UVM is based on Java technology. It will benefit Java as a platform," Boucher said.

Valerie Olague, a marketing manager at IBM, said a fully integrated VisualAge development environment will be up and running by the end of next year.

She said IBM will sell the UVM as part of the company's VisualAge tools.

"That would be ideal," said Frank Pollard, chief information officer at AllState Insurance Co. in Northbrook, Ill. "We have 21 million customers we need to support every day. Any technology that lets us build better customer services than just maintaining what we've got, we're interested in." □

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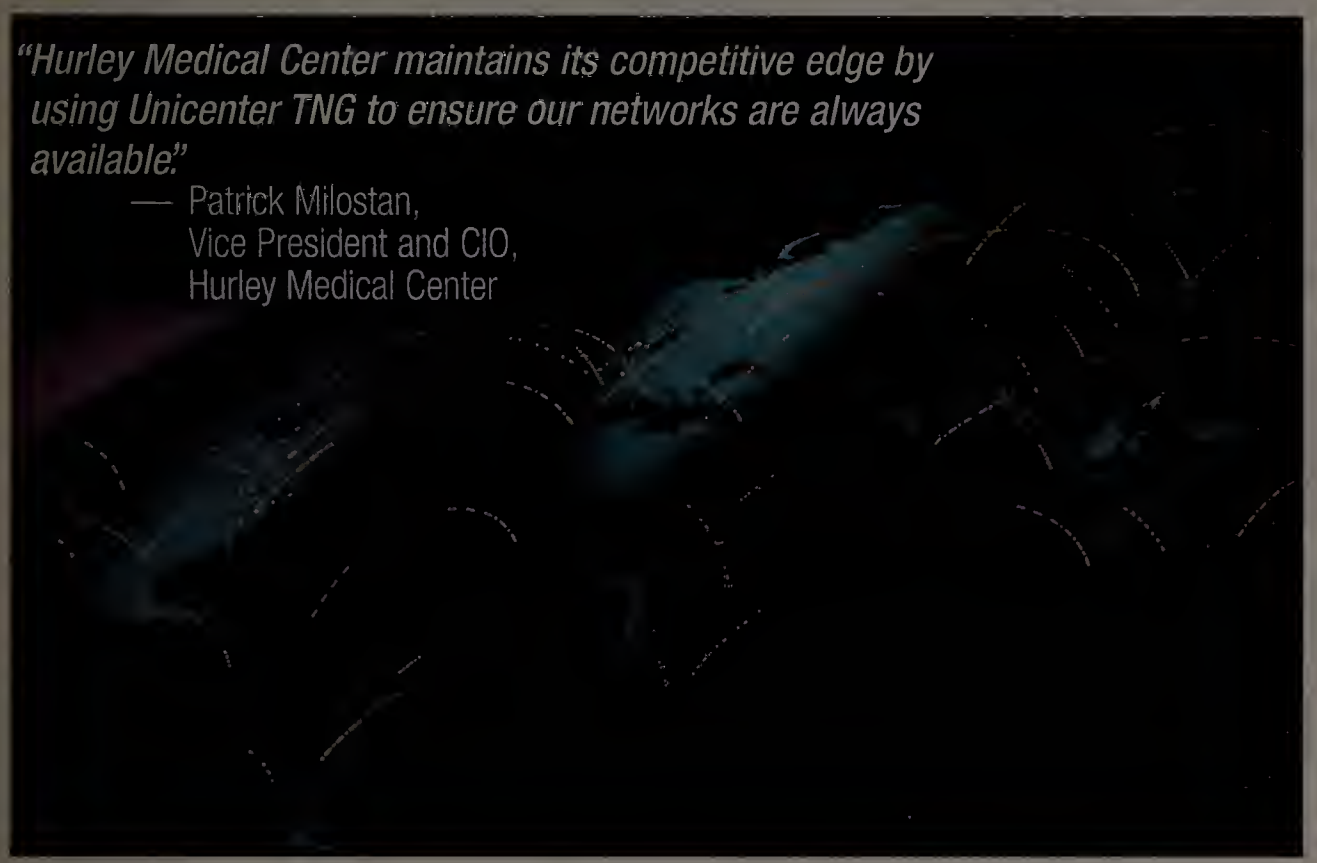

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Telcos have banks on hold

▸ *Carriers six months behind testing deadline*

By Matt Hamblen
ATLANTA

BELL ATLANTIC CORP.'s voice and data networks will be year 2000-compliant in mid-1999, a company official told year 2000 managers last week.

That's good news for New York-based Bell Atlantic, but it isn't good news for some year 2000 managers who represent banks and other companies.

Large banks need to test whether they will be able to transfer money over Bell Atlantic's networks in time to meet a Dec. 31, 1998, compliance deadline set by the Federal Reserve Board. That's six months before the carrier says its network will be ready for thorough testing.

Crestar Bank in Richmond, Va., has 450 branches in the mid-Atlantic region that receive local voice and data services from Bell Atlantic. The bank wants to thoroughly test its ability to transfer funds among branches, but it might be forced to wait, a Crestar official said.

YEAR 2000

"I'm in a bind because I'm [working at] a bank, and [it has] to be compliant by year's end," said Michael E. Cobb, Crestar's vice president in charge of the bank's year 2000 project. He attended the Year 2000 National Symposium held here.

James Jones, managing director of the Information Management Forum in Atlanta, a group of information systems users, said banks as well as long-distance carriers should be involved in the interoperability testing of local networks operated by Bell Atlantic and other local carriers.

"Banks and some other businesses have a big problem with the telcos because they aren't going to get the opportunity to test their networks in time," Jones said.

READY OR NOT

Bell Atlantic's 472 network operating systems:

92% Were assessed for year 2000 readiness

48% Affect customer services

32% Were deemed compliant

Source: Bell Atlantic Corp., New York

NO PROBLEM

At the conference, year 2000 managers from Bell Atlantic, Bell South Corp. in Atlanta and Alltel Corp. in Little Rock, Ark., described their efforts to become year 2000-compliant. Officials at Bell South and Alltel didn't give dates by which they plan to have preparations complete but said they are confident they will be ready.

Cobb said Crestar may seek ways to begin testing prior to Bell Atlantic's readiness, but the effort can only go so far.

Bell Atlantic is spending more than $200 million to prepare for the century date change.

The company lets business customers run data over its networks, but it doesn't allow "intrusive" tests, said Don Van Valkenburgh, a year 2000 manager for Bell's networks. An intrusive test would set the date on a telecommunications switch or other network device past Jan. 1, 2000.

Of 472 network operating support systems at Bell Atlantic, 437 have been assessed so far, and 152 were found to be year 2000-compliant, Van Valkenburgh said.

NATIONAL TESTS

Bell Atlantic also is working with seven other local carriers, including the Baby Bells and GTE Corp. in Stamford, Conn. The companies are part of a group called the Telco Forum.

They plan to nationally test their networks' interoperability by the end of the year.

Van Valkenburgh said Bell Atlantic wants to share the results of those tests with business customers and the public. He said long-distance carriers would be invited to join the test to examine the connections between themselves and local networks. □

'Futz factor' measurement tough to pin down in TCO

By Patrick Dryden

UNCERTAINTY ABOUT measuring how much time users waste at their computers may skew studies of total cost of ownership (TCO).

Information systems managers, consultants and analysts differ in their TCO studies when it comes to calculating the so-called "futz factor."

Some lump together all nonproductive user activity to get this value. Others try separating business-related and personal activities — reading a competitor's World Wide Web page vs. surfing for stock tips, for example — and count some as futz.

"It's next to impossible to accurately measure how much time users spend messing with a computer to make it work."
-- Greg McAndrews, General Accident Insurance

Either way, results may be refuted by the argument that misuse isn't an IS cost. "Futz has become a misnomer," said Bill Kirwin, a research director at Gartner Group, Inc. in Stamford, Conn. "Now many confuse the entire category of end-user operations with this one piece, then make the mistake of throwing out the entire value."

FOOLING AROUND

Gartner analysts originally defined the futz factor in their TCO model as the use of business technology for personal pursuits. Obvious examples include playing a game, plotting a child's sports schedule and fussing with the appearance of a Windows desktop.

Every user spends one hour per week that way in Gartner's model. Other factors that add to the cost of end-user operations include supporting peers, enduring downtime, learning informally and managing personal files.

Splitting hairs that way isn't easy, however.

Both "fooling around with computers" and "wasting time with features, lockups and inconsistencies" made up the futz factor for American Airlines, Fort Worth, Texas-based airline.

"If you believe that value, futz adds 25% or more to the cost of our PCs," Fitzgerald said. He said he accepts both aspects even though misuse is an issue for management, not IS. "It doesn't take a PC to waste time," he said.

High operating costs come from flexible office systems, Fitzgerald said. Years before network computers were an option, the airline fought futz by installing diskless, controlled PCs in terminals and reservation sites, he said.

General Accident Insurance Co. calculated TCO with and without a futz factor because the Gartner Group value appeared "somewhat inflated for us," said Greg McAndrews, a financial business consultant at the Philadelphia-based insurer.

He said the IS group audits 5,000 PCs for unauthorized software, removes the games built in to Windows and distributes corporate guidelines warning against non-work-related activities.

"Most clients have ignored futz because of the confusion," said Scott Pierson, manager of Microsoft solutions at Software Spectrum, Inc., a consultancy in Garland, Texas. He said clients want to measure only what can't be disputed, so they focus on purely business-related cost and efficiency issues.

But organizations must clearly define futz as inappropriate computer use, include it in their TCO calculations and address it, Kirwin said. "TCO is a *management* issue, not just an IS issue," he said.

Focusing only on IS costs ignores the total cost in a distributed environment, Kirwin said, because so many departments buy and support systems independent of the IS budget.

The entire enterprise must be aware of misuse, he said, to address activities that impede regular work or put the company at risk, such as downloading bootleg software or pornographic images that invite sexual harassment cases.

Kirwin acknowledged that measuring appropriate and inappropriate use can be difficult, however.

"Futzing is in the eye of the beholder," Kirwin said. Reprinting pages to get the format and page-breaks right is acceptable, for example, "but not being inordinately anal about perfecting the format for an internal memo that few will read." □

QUIZ TIME

QUESTION: Do you know which of the following events contribute to the "futz factor" of nonproductive user activity?

- ☐ **1.** Playing solitaire
- ☐ **2.** Searching local and network directories for a report
- ☐ **3.** Personalizing icons, wallpaper and screen savers
- ☐ **4.** Explaining macro commands to a co-worker
- ☐ **5.** Experimenting with a project management tool
- ☐ **6.** Arranging a lunch date via E-mail
- ☐ **7.** Browsing user-group bulletin boards and Internet newsgroups
- ☐ **8.** Configuring Microsoft Word default fonts and formats
- ☐ **9.** Rebooting after a Windows lockup
- ☐ **10.** Surfing the Web to plan a vacation

ANSWER: According to Gartner Group analysts who defined futz, **1, 3, 6** and **10** constitute use of business technology for personal pursuits. The others constitute casual learning, local management, peer support and downtime.

Microsoft's Database Doesn't Run on Windows CE

Everyone knows that Microsoft's database doesn't run on large computers — enterprise servers. But did you know that it doesn't run on small computers — handheld PCs and palmtops — either? In contrast, Oracle runs on the largest servers — Oracle8™ — down to the smallest palmtops — Oracle Lite. Don't mistake Oracle Lite for Microsoft Access or some other loser database product. Oracle Lite has complete integrated Java stored procedures, comprehensive advanced bi-directional replication and it operates in less than 1 MB of memory.

	Oracle Lite	Microsoft SQL Desktop
Runs on Palmtops	YES	No
Runs on Handheld PCs	YES	No
Runs on NCs	YES	No
Supports Java	YES	No
Synchronizes Data Two Ways	YES	No
Supports Object and Relational Data	YES	No
Synchronizes via Wireless	YES	No
Supports Row-Level Locking	YES	No
Safe for Large-Scale Deployment	YES	No
Available	Today	Not Planned

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Security onus put on vendors

▸ *Experts tell forum industry needs to provide encryption, policies*

By Laura DiDio
ATLANTA

TWO DOZEN government and security executives last week called on the vendor community to create the necessary tools to help users safeguard their data.

They also urged corporate America to get smart and lock down its systems.

The call came from a roster of executives speaking at the Sam Nunn Policy Forum on Security at the Georgia Institute of Technology.

The overriding theme was the need for strong, global encryption and security policies.

But the onus is on industry to develop the technology, said speaker Lou Gerstner, IBM's chairman and CEO (see interview below).

"Industry can and should do most of the heavy lifting when it comes to developing technology," Gerstner said.

George Tenet, director of the CIA, agreed. "The government won't create the security infrastructure of the future. Industry has to get off its butt and do it," Tenet said.

Industry hasn't been idle in advancing security technology, said William Malik, a vice president at Gartner Group, Inc. in Stamford, Conn.

INFORMATION SECURITY

For instance, he said, systems vendors are starting to embed antivirus software and even firewall capabilities directly into their hardware, which will eventually obviate the need for today's stand-alone devices.

"So far, it's been mainly tactical solutions. What's lacking is a cohesive strategy to make security a part of the overall business plan," Malik said.

For example, a security director at a major Midwestern consultancy who requested anonymity said his firm recently spent a month assessing security risks at two Fortune 10 accounts. "They had no clue when the networks were hacked," he said. "Both firms averaged one serious hack a week for every 5,000 users. And the losses totaled $5,000 and up. Unfortunately, this is all too typical."

Despite the recent spate of highly publicized hacks, some security professionals said they still find it hard to justify security expenditures to upper management.

"We've got antivirus software and firewalls in place, but beyond that, it's tough to convince my CIO that security should be built in to the network. They just don't get it, so I don't get the necessary money and manpower," said a security manager at a Fortune 500 company in upstate New York, who requested anonymity.

THINK DIFFERENTLY

Gus Rogers, director of corporate computer security at Merck & Co. in Whitehouse Station, N.J., said companies need to revise their thinking.

"Security is not a technical issue; it's about business integrity. Purchasing [security] is a real problem because many organizations don't see beyond the up-front costs," he said.

Consequently, many users find themselves ill-equipped to deal with internal or external hacks.

Also, they frequently lack the knowledge and resources to determine if they have been hacked.

Gerstner blamed most security breaches on information systems managers who don't enforce security policies and let end users and even network administrators behave carelessly. Even the security of the sacrosanct data center is violated by information technology workers "who leave the door to the data center open because it's hot," he said.

"In short, businesses need to take a look at their organizations and see where the risks are and start enforcing security policies." □

Security tips from Scott Charney, chief of the computer crime division at the Department of Justice:

- Assign responsibility and control for security to a person or group
- Emphasize security in your overall IT strategy
- Formulate a security contingency plan
- Put together a dedicated security team
- Call law enforcement agencies as soon as you suspect a security breach

& **The feds can't keep up with costly cybercrime.** **Page 41**

Gerstner on encryption policy: 'It's crazy' to restrict technology

IBM Chairman and CEO Lou Gerstner has taken an outspoken stance on encryption exports. Last week, he called on corporate America to shoulder its share of the burden and bolster its internal security. Computerworld *senior editor Laura DiDio interviewed Gerstner on current U.S. encryption policy.*

IBM's Lou Gerstner: "We support the efforts to keep the Internet a tax-free zone"

CW: Can you give us some details on IBM's security initiatives in terms of your various products?

GERSTNER: We're putting security features into all relevant IBM products [such as] in Secure Electronic Transactions and banking transactions, and we're also embedding security in our basic server operating systems. IBM is also working on other broader schemes like key-recovery technology.

CW: What are you doing with regard to security services?

GERSTNER: We've built a significant security consulting practice within our Global Services company. They help customers forge strategies [to deal with] everything from ethical hackers to implementing security policies and procedures. There's no sense in having a great big vault in which the door is open all the time.

CW: What's IBM's stance on the ban on exporting 128-bit key encryption?

GERSTNER: I believe the government should change its policy from controlling the export of encryption to encouraging the wide use of encryption around the world. I'm in favor of eliminating controls of encryption exports. If government needs to have certain control, I would argue those controls ought to be on location and purpose and not on technology levels.

CW: Why?

GERSTNER: It's crazy to put restrictions on levels of technology. We grow out of them so quickly that the apparatus of government can't keep up. We're basically going to face the inability to export entry-level workstations in a year. Instead, the government ought to identify places and uses where we don't want technology to go and enforce that.

CW: How do you compare U.S. security initiatives with those of other nations?

GERSTNER: They are now full players at the table and come with, in some cases, very different viewpoints, so I think it's going to be more complicated to bring about a global solution. □

FBI asks companies to report hack attacks

By Matt Hamblen
CAMBRIDGE, MASS.

MORE COMPANIES need to go to the FBI or local police when hackers try to break in to their networks.

That's because those agencies can investigate more promptly and try to prevent more serious crimes, an FBI agent told computer executives last week.

Only 17% of 520 computer technology companies surveyed by by police agencies for the FBI said they had reported evidence of hacking to police, said Richard D. Watson, a Boston-based assistant special agent in charge of white-collar crimes.

He addressed software executives here at the Enterprise Security Seminar sponsored by Bull Worldwide Information Systems, Inc. in Billerica, Mass.

"If somebody hacks, we need to know that," Watson said. "Are they just kids or more nefarious? Is it Saddam or somebody who would commit another World Trade Center bombing?"

In a recent case involving a teen-ager who hacked a Bell Atlantic Corp. telephone switch that closed down communications at the Worcester, Mass., airport, Bell Atlantic wasn't identified until federal officials had warned other voice and data carriers so they could alter switches to deter similar hacking, Watson said.

NO EMBARRASSMENT

The FBI understands that companies want to avoid embarrassment or potential litigation and financial losses if investors find out about a hacking incident, he said.

But current federal rules can give a judge the ability to hide the identity of a company making a hacking complaint, at least until the matter is resolved.

Watson's remarks seemed to have an impact on listeners — to a point.

"I can see the FBI's side," said Ted Hoffman, information systems director at Graybar, a wholesaler of telecommunications devices in St. Louis.

"But this is a huge responsibility for a company to tell people like the police you have a hacking problem," Hoffman added.

Watson also defended the FBI's opposition to U.S. sales of 128-bit key encryption software. He said agents feel frustrated that companies would want to undermine their ability to interpret messages that could protect U.S. security and lives. □

11 hours: Notebook keeps on going

By Kim Girard

MICRON ELECTRONICS, INC. soon will offer the road warrior's dream machine — a notebook that promises 11 hours of battery life. But don't expect the bigger players to match that any time soon.

Nampa, Idaho-based Micron, which targets small to midsize companies, will debut the GoBook at Comdex/Spring '98 in Chicago next week. The notebook's base is a 2.1-pound, detachable lithium-ion prismatic battery that gives users eight hours of use. Coupled with the battery housed in one of the notebook's bays, users should expect up to 11 hours of running time. The machine weighs 4.5 pounds without the battery.

LAPTOP CONCERNS

What's important to notebook users (1=least important, 5=most important)

System reliability	4.57
Availability	4.21
Vendor reputation	4.18
Service and warranty	4.16
Microprocessor speed	4.02
Price	3.99
Battery life	3.99

Base: 300 buyers at midsize and large businesses

Source: Gartner Group, Inc., Stamford, Conn.

Richard Hoffman, lead applications engineer at the American Red Cross in Falls Church, Va., said the GoBook will be worth examining. The Red Cross currently uses IBM ThinkPad notebooks and sends users into the field with two spare batteries.

"It's sort of that Holy Grail of being able to do a coast-to-coast [trip] on one battery," Hoffman said.

But Randy Giusto, an analyst at International Data Corp., a consultancy in Framingham, Mass., said for most corporate users, battery life is a lower priority than reliability, availability and vendor reputation.

SMALL-FRY ARENA

"All the small guys are playing with [battery and design] because they ship 20,000 to 30,000 units a quarter," Giusto said. With hundreds of thousands of units to ship and OEMs to track, it is too expensive for a Toshiba or IBM to invest money and staff in a fashion statement, he said.

And it might not be worth it for a user either, said Ken Dulaney, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consultancy. Dulaney said so-called slice-design notebooks aren't what most users want because the battery base adds another layer of complexity to the machine. And a 2.1-pound battery is more weight to lug onto a plane in an era of 4.5-pound notebooks, he said.

Larger vendors are looking at new technology to extend battery life, but the pickings are slim and the product cycle is long. Lithium polymer, a next-generation battery technology touted because the cells are more flexible and can be better molded to fit in thinner laptops, isn't ready for use, analysts said, mainly because such batteries die quickly.

Of the top-tier notebook vendors, Dell Computer Corp. has the best battery life across its line, but of all the notebook vendors, Acer America Corp. has done the best job extending battery life, Dulaney said. The company uses power-management software to give its TravelMate 7000 seven hours of battery life.

Micron's GoBook features an Intel Corp. MMX Pentium processor, a 12.1-in., Super VGA resolution and active-matrix display. It has a second bay for a CD-ROM, Zip or floppy drive, or an extra battery. A Pentium II-based GoBook is due later this year. A 233-MHz GoBook with 32M bytes of RAM and a 2.1G-byte hard drive will cost less than $3,000 and is expected to ship late next month. □

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WITHOUT FDR INSTANTBACKUP	WITH FDR INSTANTBACKUP
▪ Split BCV from Primary Volume A	▪ Split BCV from Primary Volume A
▪ Relabel Off-line BCV as Volume B	▪ NOT REQUIRED
▪ Vary Relabeled Volume B On-line	▪ NOT REQUIRED
▪ Backup Volume B	▪ Backup Volume A (the BCV Volume)
▪ During Restore, User Must Be Aware That Backup of Volume B is Really Volume A	▪ No Special Restore Considerations

Relabeling volumes is an administrative nightmare. It may be difficult to identify the backup of relabeled BCV Volume B as a backup of Volume A. While Volume B is online, having a VVDS with a name that does not match the volume serial may cause problems with SMS and VSAM, and reporting and capacity analysis tools will report that data sets on the BCV volumes are uncataloged.

NON-DISRUPTIVE FULL-VOLUME BACKUP

Example of how to perform a non-disruptive full-volume backup:

```
//FDR      EXEC PGM=FDR,REGION=0M
//DISK1    DD DSN=FDR.USE.UNIT01F8,
//            UNIT=3390,VOL=SER=MVS001,DISP=OLD
  DUMP TYPE=FDR
```

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Web server will pull out legacy data

By April Jacobs and Jaikumar Vijayan
SOMERS, N.Y.

IBM PLANS TO RELEASE a Hurricane next month — specifically a Java-enabled World Wide Web server that lets corporate developers pull data out of various legacy systems for use on intranets or electronic-commerce sites.

The product, code-named Hurricane, will run on Windows NT and on the S/390, AIX, Solaris, HP-UX, AS/400 and OS/2 operating systems, IBM officials said at a briefing here last week.

IBM's latest server is aimed at users who want to build Web applications that extract corporate data from middleware and legacy systems, such as IBM's DB/2 database. They will be able to do that because Hurricane supports Sun Microsystems, Inc.'s Enterprise JavaBeans component technology designed to build applications.

"This is a great opportunity to help people bridge their environments," said Michael Goulde, an analyst at Patricia Seybold Group in Boston.

IBM's Hurricane will feature:

- Connectivity to database, transaction server and E-mail
- Information gathering and analysis tools
- Support for Enterprise JavaBeans

Hurricane also will feature Servlet Express, a plug-in that turns Hypertext Transfer Protocol servers into Java-enabled Web servers.

Ken Hawk, CEO and founder of 1-800-Batteries, Inc. in Lake Tahoe, Nev., said Hurricane sounds like a good addition to IBM's Net.Commerce software suite, which the company uses for its Web commerce site.

Hawk said users are likely to appreciate Hurricane's ability to access legacy data without having to port it to another platform, because that can slow down performance.

THAT'S A LOT OF BATTERIES

Web server performance is important, Hawk said, because 1-800-Batteries offers more than 7,000 types of batteries and has a lot of data that must be managed.

A second version of Hurricane, due in the fall, will add features such as data collection and data mining tools. Hurricane is part of IBM's broader strategy to let users expand their information technology investments to the Web, said Irving Wladawsky-Berger, general manager of the company's Internet division.

IBM's Hurricane offers "a great opportunity to help people bridge their environments." – Michael Gouide, Patricia Seybold Group

"The key here is, [users are] rapidly moving from publishing static information" on the Web to deploying transaction servers, to running business applications, Wladawsky-Berger said.

Besides Web-oriented products, IBM will offer services tailored to build electronic-commerce applications for vertical industries. Wladawsky-Berger said the financial companies are among the earliest online business adopters, followed by distribution, transportation and travel sectors. □

Assistant news editor Michael Goldberg contributed to this story.

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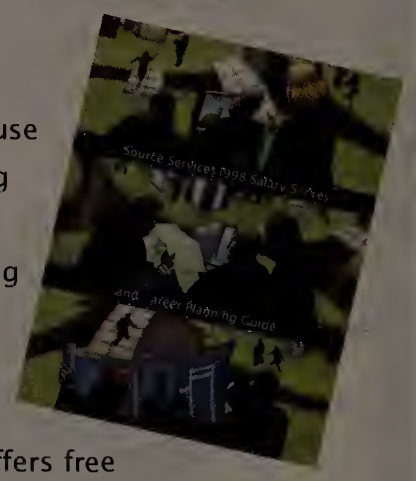

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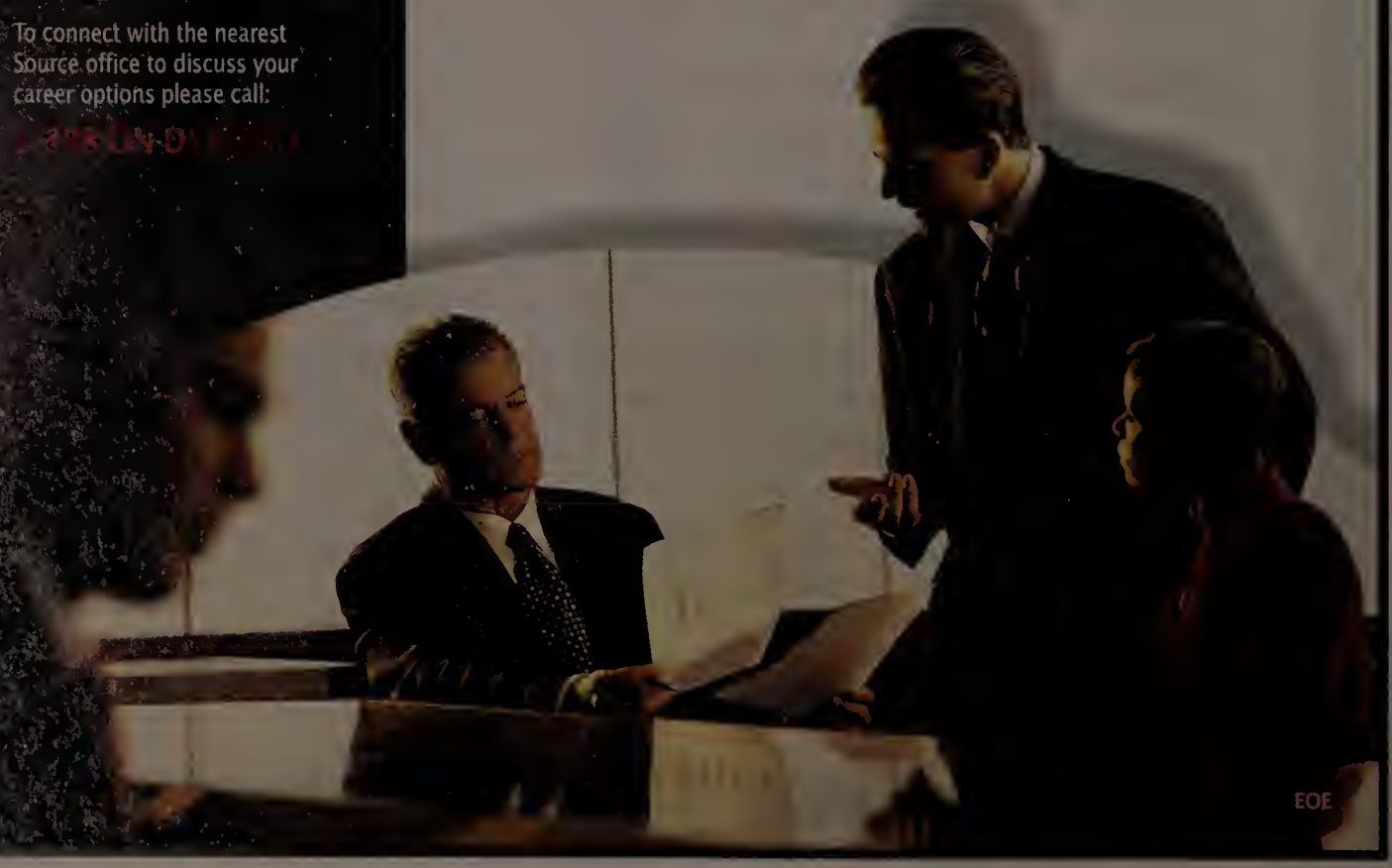

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FRANKLY SPEAKING

IS doesn't measure up

FRANK HAYES

REASON NUMBER 47 that users think IS people are a bunch of clueless dweebs: They measure their business performance; we measure technology trivia.

Let's face it, even if we're great at creating business value with information technology, we're lousy at measuring it. Our so-called "business" peers justify their existence by measuring production or sales or customer satisfaction — things that have a clear impact on the bottom line.

What do we measure? Lines of code. Function points. Capacity utilization. Data access volume. Bugs fixed by developers. Problems cleared by the help desk.

Those things are easy to measure as we build applications and run our systems. But those measurements don't tell us anything about whether we're putting technology in the service of our businesses, much less increasing profits.

What's worse, measuring those things may actually damage our ability to deliver real business value. As soon as you begin to measure something, that measurement becomes the goal.

Don't waste time collecting techno-trivia.

What you measure is what you'll get.

So if you measure the lines of code your developers produce, they'll crank out lots of lines of code — and large, bloated applications. Measure function points, and you'll get lots of function points — and complex applications. Measure bugs fixed, and you'll get buggy software that requires lots of fixes.

Meter capacity utilization, and you'll get busy machines and networks. Track data access volume, and you'll get heavily used databases. Count the problems cleared by the help desk, and you'll get lots of problem calls.

Not one of those results provides your organization with a business benefit. Most actually damage your mission. You don't need large, complex applications, busy networks and servers, or a steady stream of help desk calls. You need more productive users who can use your systems to create and sell more products and services.

Measure the wrong things, and you won't just waste the effort you spent measuring, you'll also waste your IS staffers' time as they chase after the wrong goals.

TARGET YOUR METRICS

What are your *real* business goals? You want to deliver applications to users quickly and with the functionality they want, right? You want to run your networks and servers with the fastest response for users. You want problems permanently solved by the help desk, not just endlessly recycled.

How do you measure that?

Start by getting out of the IS shop. Do your measuring with the people who have a clue about your business performance: your users.

Ask them how happy they are with your systems. Use a 1-to-10 satisfaction scale. You probably won't like the answers, but it'll give you a baseline from which to improve.

Then drill down. Get specifics. Are important functions missing from your applications? Are there too many unneeded functions? Do networks and servers bog down at certain times of day or with certain applications? Do problems get fixed or just put off?

Don't waste time surveying them all. Pick a few key users — key because of their business smarts, not their comfort with technology — then book 15-minute appointments and interview them face-to-face.

But most of all, don't waste any more time collecting techno-trivia. Quit clocking your technology performance, and define a new set of goals for IS by measuring — and rewarding — business effectiveness. You may find that, once again, what you measure for is really what you'll get. □

Hayes is Computerworld*'s staff columnist His Internet address is frank_hayes @cw.com.*

SHORTS

White House talks privacy . . .

The Clinton administration is finalizing plans for a two-day Internet privacy summit May 13 and 14 to discuss policy and technology issues. A final agenda is being hammered out; advocates such as the Electronic Privacy Information Center in Washington are pushing to allow more public participation and to allow for industry and organization representatives.

. . . and deletes its own files

U.S. District Judge Paul L. Friedman last week repeated an October order that the White House may not erase computer files without first announcing its plans and giving researchers time to protest. He said the first order had been flagrantly violated. Government officials said they feared that saving millions of messages would cause applications to grind to a halt.

Year 2000: No promises

Only 21% of IT professionals said they will offer warranties or guarantees to be year 2000-compliant, according to a survey of 200 companies by The Cutter Consortium in Arlington, Mass. The survey showed that 80% of those same information technology managers said their companies haven't disclosed to their CEOs the expected cost of year 2000 compliance.

Judge: Domain fee is a tax

Network Solutions, Inc. in Herndon, Va., can continue to collect money for its own operations but must stop earmarking $30 of its $100 fee for the National Science Foundation unless Congress declares the amount a tax, Judge Thomas Hogan of the U.S. District Court for the District of Columbia ruled last week. The Foundation money goes into a fund for Internet development. That fund contains more than $45 million.

Cabletron acquisition?

Cabletron Systems, Inc. this week is expected to acquire switch vendor NetVantage, Inc. in an effort to add Gigabit Ethernet uplinks and other Ethernet products to Cabletron's line of switches, according to industry sources. Officials at Rochester, N.H.-based Cabletron and NetVantage in El Segundo, Calif., declined to comment. NetVantage posted net losses of $18 million last year and $9.9 million in 1996.

Hertz renews IBM

The Hertz Corp. in Park Ridge, N.J., last week said it will renew a 5-year-old data center outsourcing deal with IBM. The deal is worth more than $100 million. The renewal runs for another five years and is valued at about the same amount. IBM said Hertz's mainframe will be clustered and processors beefed up.

Microsoft backs off Palm PC

3Com Corp.'s feathers — ruffled over a dispute about the name of Microsoft Corp.'s new Palm PC — appear to be smoothed for now. The companies last week agreed to settle trademark violation suits 3Com filed in Europe over Microsoft's use of the term "Palm PC," which 3Com alleged would cause confusion with its popular PalmPilot. Microsoft agreed to refer to devices in future releases as "palm-size PCs."

Wearable PC

San Jose, Calif.-based Seiko Instruments, Inc. in June will ship a DOS-based wristwatch PC that runs personal information management applications. It will cost about $300. It will be sold only in Japan.

Data mining

Moving from the cloaked world of police and government intelligence to the business arena, Autonomy, Inc. in San Francisco has shipped two server-based data mining products for corporate users. Unlike most competing products, Agentware Knowledge Server and Agentware Knowledge Update track which documents and World Wide Web pages users read and build a profile of user interests and expertise. The products also analyze documents and create hyperlinks on the fly to other corporate documents and Web documents.

SHORT TAKES Informix Software, Inc. last week released an upgrade of its Dynamic Server database that supports some of the SQL syntax used by its rivals, making it easier to port applications to the Informix server. . . . Under a new agreement , **Fujitsu Ltd.** will develop a version of Sun Microsystems, Inc.'s Solaris operating system for Intel Corp.'s upcoming Merced chip, and Fujitsu will sell and support Solaris on its Intel hardware. . . . **Lawson Software, Inc.** in Minneapolis last week announced that versions of its packaged applications that run on Windows NT 4.0 and support databases from Oracle Corp. and Informix are shipping. . . . Washington-based **MCI Communications Corp.** on Friday said it would revise its previously announced fourth-quarter financial results. The company will take most of a write-down of about $147 million for planned equipment disposals this year, rather than last year, improving the financial statement. . . . **IBM** this week will announce a new version of its voice-recognition runtime engine designed to let telephone-based applications respond to voice commands rather than keypad commands.

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SHORTAGE = STRESS

Tips for fixing stressful IT situations:

For IT managers	For IT workers
• Divide project duties clearly and fairly	• Communicate concerns with management
• Delegate authority to workers	• Be specific when explaining concerns
• Provide more job feedback	• Don't present vague demands that can't be met
• Appoint a full-time project manager	• Attend stress management seminars
• Appoint one worker to be a part-time "wellness" officer	• Rest when possible

Stress levels jump; IT burnout feared

CONTINUED FROM COVER 1

IT skills shortage is the primary reason stress levels have ratcheted up a notch in the past few years, according to a recent survey of 324 IT workers by Olsten Corp., a staffing company in Melville, N.Y.

"IS right now is very ripe for burnout," said Jo Ellen Moore, an assistant professor of IT at the University of Southern Illinois in Edwardsville.

Observers warned that this stress could hit IS budgets in lost productivity, absenteeism and increased recruiting and training costs to replace frustrated workers who leave for calmer pastures.

Experts said IS managers can help prevent staff burnout by relying even more on outsourcers and by improving work processes so fewer staffers can work more efficiently.

AN OLD FRIEND

Of course, stress has been no stranger to IS departments over the years, especially among user support and help desk workers.

But instead of dealing with complaints about layoffs and isolation, IS departments are reacting to the pressure from a slew of crucial projects that are often central to a company's business strategy and success.

A survey conducted last fall by Ronin Corp., a U.K. research firm, found that more than 65% of the 500 U.S. and U.K. IS managers polled said their departments are now the riskiest part of a business to manage.

And 75% of those surveyed reported a major project failure that raised stress levels even more.

"IS managers are being held accountable more to deliver projects on time and on budget," said Walter Viali, IT process manager at Texaco, Inc. in Bellaire, Texas.

Cambridge, Mass.-based Millennium Pharmaceuticals, Inc.'s IS department was already bogged down with a client/server system rollout when a request came in for a system to manage resumes and recruiting. Rather than further stretch his staff, IT manager Chino Roa agreed to outsource the effort to an online resume management service (see story, page 47).

And at Southwest Airlines Co., IT workers have 10 major projects on their plates, said Terry Hornbaker, director of reservations technology.

To stave off stress, many companies have added job benefits such as health clubs, casual days, flexible work schedules and child care.

But experts said IS managers can do several things to improve the work situation, starting with communication.

"Not many people will talk about stress at work because they fear it could be detrimental to their jobs," said Eugene Kaluzniacky, an instructor in computing who is researching IT stress at the University of Winnipeg in Manitoba.

Furthermore, improved systems development processes can streamline work and remove a lot of job ambiguity that causes stress. For example, Texaco re-engineered its IS development work. As a result, "our team feels a lot less stressed out right now," Viali said. □

Forget ROI. Get me ERP

CONTINUED FROM COVER 1

mainframe applications.

"It used to be required, but I don't have time to do an ROI anymore. That's a thing of the past," said Dennis Miller, chief information officer at Memorial Healthcare System, a hospital group in Hollywood, Fla. The company recently installed Lawson Software, Inc.'s financial and human resources packages.

Memorial Healthcare expects to save money by tightening the process of buying supplies and ridding itself of the need to do a year 2000 fix on some of its 20-year-old mainframe applications, Miller said.

But the purchase was justified on squishier grounds: End users wanted to be able to create analytical reports with spreadsheets and other general-purpose tools, and the mainframe programs weren't keeping up with the growth rate at Memorial Healthcare.

"It was really being able to move to a system that's ready for the next century," Miller said.

In fact, one analyst said that for many users, this single argument is enough: ERP systems are necessary to compete in today's business climate.

"You wouldn't justify to the board the need for water and power, and this is on that level," said Jim Shepherd, an analyst at Advanced Manufacturing Research, Inc. in Boston. "You cannot run a business without it. It's not a discretionary purchase."

And ERP applications don't fit traditional ROI models very well anyway, Shepherd added. Attempting to shoehorn cost-justification formulas that work with capital equipment expenses onto packaged business applications is an "artificial process," he said.

Having an ROI calculation to hang your hat on still makes sense if getting one is possible, said Jim Holincheck, an analyst at Giga Information Group in Cambridge, Mass. But in doing the math, unwieldy manual functions such as procurement may be easier to measure than more cut-and-dried tasks such as finance and human resources.

"A lot of people are re-automating what they've already automated, and there isn't necessarily a big return there," Holincheck said. In those cases, it may be more important to have support from a senior executive "who knows in his or her gut that it's something they have to do," he said.

BIGGER FISH TO FRY

Even some firms undertaking the complex implementations of SAP AG's R/3 system are skipping cash ROI analysis in favor of improved functionality.

Hewlett-Packard Co.'s Medical Products group in Andover, Mass., made "an attempt to do an ROI, but the fact is, the [technology] is so big and covers so much functionality that it is really hard to realize what the ROI is going to be," said Wade Thompson, a member of the R/3 implementation team.

Mays Chemical Co., a chemicals distributor in Indianapolis, also passed on an ROI calculation when it evaluated packaged software that is now being installed. The reasoning was simple: Mays wanted nothing to do with getting its customized AS/400 applications ready for the year 2000.

Return on investment "is a nonissue," said Randy Randol, project manager at Mays for the scheduled 1999 rollout of Lawson's applications. "We can't stay in business if we don't have a new system."

United Technologies Automotive, Inc. tried to cost-justify its QAD, Inc. manufacturing applications but came up with numbers that didn't look so hot. It went ahead anyway, said G. Wayne Tamme, an information and network resources program manager at the $3 billion United Technologies Corp. subsidiary in Dearborn, Mich.

The QAD software gave the company supply-chain management capabilities its automaker customers demanded, so United Technologies could track the history of parts that get used in the components it makes, such as windshield wiper systems.

Investing in the new technology was "just a cost of doing business," Tamme said. "If you want to play the game, you've got to ante up. If not, the world will just pass you by." □

Late to the ROI party

Even early adopters of SAP's R/3 software system, such as Hydro Agris North America, Inc. in Tampa, Fla., have struggled with coming up with quantifiable ROI several years after they started using the software.

Andy Hafer, technology chief at the agricultural products company, said his office didn't do any extensive ROI when it began implementing R/3 five years ago.

"For four or five years, I have had this issue on top of my mind in terms of coming up with some quantitative ROI," Hafer said. Hydro Agri settled on such quasi-tangible justifications as dying legacy systems, year 2000 problems and inventory control needs. But the company found the idea of the entire company running on an integrated software system the most compelling reason.

"We had huge cultural issues, and we needed to integrate the different corporate cultures that came in from different acquisitions," Hafer said. "R/3 was used as the enabler to integrate us onto a common corporate platform." — Randy Weston

How to justify an ERP implementation without ROI data:

- It's an infrastructure must
- We need it to remain competitive
- Aging mainframe applications can't handle business growth and aren't year 2000-compliant
- Integrated applications streamline business processes
- It can reduce inventory and labor costs

Source: Advanced Manufacturing Research, Inc., Boston

MOREONLINE

@Computerworld's research links to ROI and ERP articles, white papers, case studies, publications, organizations and examples can be found at: *www.computerworld.com/links/*.

See the "ROI and information technology" and "Enterprise resource planning" pages.

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Web privacy issue spurs Firefly sale

▸ *Software to aid Microsoft's marketing muscle*

By Sharon Machlis

MICROSOFT CORP. last week agreed to buy Firefly Network, Inc. to obtain its software for personalizing World Wide Web sites and creating profiles of Web customers.

Microsoft officials said the purchase will help the company promote standards such as the Platform for Privacy Preferences (P3P). P3P sets out a common way for Web sites to define their privacy policies and lets users more easily decide how much information about them various sites can access. It is being developed by the World Wide Web Consortium.

The goal is to ease consumers' privacy fears about the Web. The question of privacy has been a key stumbling block in efforts to get consumers to release personal information on the Web — and thus allow companies to better target their marketing and sales efforts.

Firefly next month will roll out an updated version of its Web personalization "passport," which will incorporate P3P.

Marc Rotenberg, director of the Electronic Privacy Information Center in Washington, said he gives Firefly points for letting consumers access their own information. But he said Internet privacy must also help people surf anonymously and block cookies if they choose. P3P "is more of a marketing standard than a privacy standard," he said.

Barnes & Noble's Susan Boster: "Relationships are key to commerce"

Firefly's software will also support an emerging set of privacy techniques called the Open Profiling Standard (OPS), which was first demonstrated publicly at a federal hearing last June. It outlines a common way for storing personal information in software and lets users decide whether a Web site should be allowed to tap in to some or all of that data. OPS is backed by both Microsoft and Netscape Communications Corp.

The new passport currently is being installed on the Barnes & Noble, Inc. Web site, officials at both companies said.

Barnes & Noble already uses Firefly software to keep profile information about registered users, who can enter their reading preferences and get personalized book recommendations. "What this does is very close to what we do in our stores," said Susan Boster, director of marketing at BarnesandNoble.com. "Personal relationships are key to commerce."

The upgraded Firefly passport will let consumers see a log that tracks how their data has been used, change any information in the profile and ask that data not be used in the future.

If the user permits, the new passport also will allow data to be shared with other sites. So, for example, Barnes & Noble could share data with its affiliated electronic bookstores on sites such as CNN.

In a statement, Barnes & Noble vice chairman Steve Riggio called the merger of Microsoft's industry muscle with Firefly's profiling technology "great news for E-commerce."

Financial terms of the acquisition weren't released. Firefly will relocate to Redmond, Wash., and shut down its Cambridge, Mass., office. □

Microsoft blinks; makes concessions

CONTINUED FROM COVER 1

Microsoft spokesman said. "We want to smoke them out."

The letters to content providers coincided with Microsoft's launch of an advertising campaign designed to focus attention on "what's really at stake in the case: protecting the freedom to innovate, not just for Microsoft but for all companies," the spokesman said.

Microsoft's Washington, D.C.-based public relations firm also has orchestrated a plan to gain positive press in several states investigating the firm's business practices. "We need to tell our story in appropriate ways," a Microsoft spokesman said.

Regarding contract concessions, Microsoft made a similar move just days before a March 3 Senate Judiciary Committee meeting, altering provisions in its contracts with about 40 Internet service providers.

Microsoft wasn't the only one maneuvering for advantage. In the past two weeks, the Justice Department issued new rounds of civil investigative demands to major PC makers, including Compaq Computer Corp.

Meanwhile, other industry players made their grab for the Justice Department's ear. They offered up a 10-point list of "remedies" designed to curb the software company's alleged monopolistic misbehavior.

The so-called remedies are loosely patterned after a set of competition principles endorsed earlier this year by the board of the Software Publishers Association (SPA). Indeed, SPA President Ken Wasch acknowledged that he had a hand in crafting the remedies but declined to say who else did. "There's an enormous fear factor; nobody wants to harm their relationship with Microsoft," he said.

SUGGESTED REMEDIES

The following are some of the suggested solutions:

- Separating Microsoft's business units for applications and operating systems and providing Windows licensees with equal access to technical specifications.
- Prohibiting Microsoft from tying its operating system to other applications, such as its Internet browser.
- Barring Microsoft from giving away products with its operating system.

Considering potential remedies even before a case is launched is legitimate, said Eleanor Fox, a New York University law professor and antitrust expert. It is important to assess whether prohibiting certain conduct is going to be worse for consumers and business than letting the practice continue, she said.

As expected, Microsoft shrugged off the SPA-influenced remedies as a "wish list" from its rivals that has "no factual, legal or industry grounding."

The Justice Department reportedly said it has enough evidence to bring a new Sherman Antitrust case against Microsoft on grounds of illegally maintaining and extending its control of desktop operating system software. But, though it might be advantageous to bring a new case before Windows 98 ships to PC makers next month, no decision has been made.

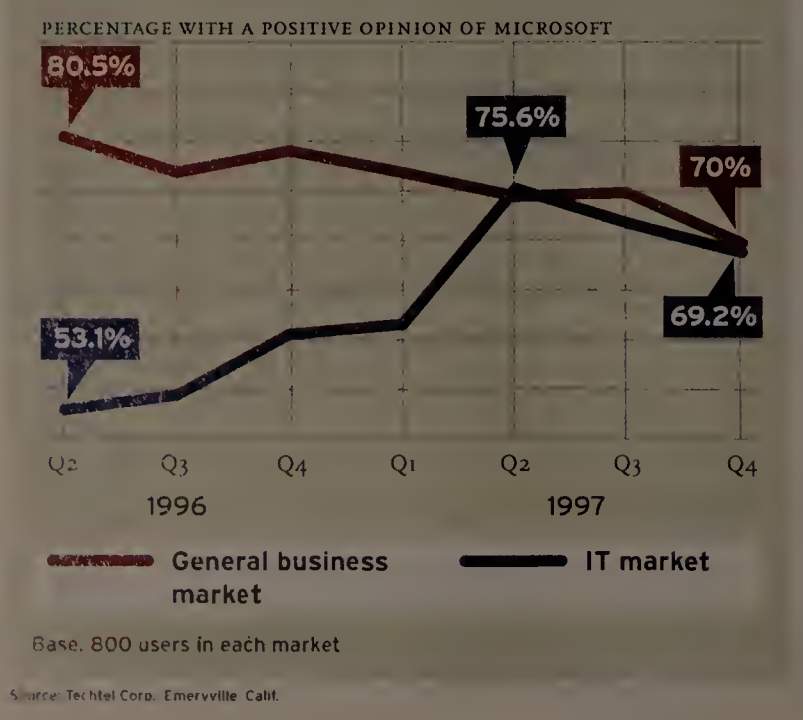
Wasch said PC makers are particularly concerned about Microsoft's ability to control the first screen that users see when they boot up their computers.

That issue becomes heightened with Windows 98, which promises to more tightly integrate the browser and the operating system.

Microsoft has agreed temporarily to separate its browser from its Windows 95 operating system, but it will appeal that order in court on April 21. □

IMAGE PROBLEM

Microsoft is seeing some decline in popularity after working hard to burnish its image two years ago; negative publicity is taking its toll



Base: 800 users in each market

Source: Techtel Corp., Emeryville, Calif.

MILLENNIUM COUNTDOWN

Top U.S. companies finally take Y2K problem seriously

By Tom Diederich

THE NATION'S TOP companies are finally getting serious about tackling the year 2000 problem, according to a poll of IT managers at 128 of America's largest corporations.

Companies that said they had a "full-fledged strategy" for the millennium bug jumped to 60% from 20% in the past four months, according to the survey, released last week by Cap Gemini America in New York.

Thirty-seven percent of the respondents reported computer failures that they blamed on year 2000 bugs, and 85% acknowledged that they had underestimated the costs to fix the problem.

The percentage of major employers with detailed year 2000 plans jumped from 33% in December to 68%, the poll said.

More corporations are also taking care of the problem themselves, according to the survey, which indicated a decline in outsourcing from 87% a year ago to 66%.

The number of companies that said they needed to beef up staff for year 2000 projects rose from 45% to 75% during the past 12 months. Of the respondents, 15% said they expected to spend 31% or more of their information technology budgets on year 2000 preparations.

Cap Gemini America has polled IT executives periodically since March 1995 to gauge corporate America's readiness for 2000. □

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Chicken chain orders CE

CONTINUED FROM COVER 1

inventory in real time, hook up a printer, easily install new or updated software or run training videos over the company's network, Bridges said.

The new Chick-Fil-A systems run Windows CE, Microsoft Corp.'s "light" version of Windows 95. The technology debuted in handheld devices and is now being pushed into markets such as embedded systems and thin clients for use in terminals and consumer devices, ranging from set-top boxes to microwaves. KFC Corp., the chicken chain leader, also is testing Windows CE-based sales terminals.

BREAK WITH TRADITION

Chick-Fil-A's thin-client project represents a departure from restaurants' Old Faithful. PC-based cashiers' sales terminals, designed by Alpharetta, Ga.-based integrator Radiant Systems, Inc., have ruled the industry for the past five years, mainly because of their reliability, analysts said.

In the retail space, Windows CE-based sales terminals will compete in territory also staked out by network computer makers. Like a network computer, the CE-based system is a thin client with no hard drive or floppy drive. All information is typically stored on a server.

TOP OF THE ROOST

Top five chicken franchises

COMPANY	1996 U.S. SALES
KFC	$3.9M
Boston Market	$1.1M
Popeye's	$666,200
Chick-Fil-A	**$569,714**
Church's	$562,000

Note: Above companies represent 72% of total market

Source: Technomic Consultants International, Chicago

Chick-Fil-A considered network computers but ruled them out because the company didn't want to rewrite code in Java, Bridges said.

But analysts are questioning whether these new thin-client retail systems can compete in a market dominated by PC-based machines that have proven track records for handling heavy data.

"We have to remember that [Windows] CE is a year and a half out of the gate" and may not be ready for industrial use, said Martin Mortensen, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consultancy. "We're still talking about the sale, and you want to make sure that this thing doesn't suddenly go down."

To ensure a backup if the Chick-Fil-A system crashes, Bridges said he is considering working with Radiant to provide each restaurant with five CE-based registers running off a server and two equipped with a hard drive.

The Windows CE-based sales terminals cost between $3,000 and $4,000 each. By comparison, it costs about $4,000 for a PC-based terminal, said Pete Reilly, a solutions director at Radiant who is working with Chick-Fil-A. But a lower cost of ownership is more important than the company's upfront hardware investment, Bridges said.

Also key, the CE-based system should help the chain simplify training and the skills needed by workers, Bridges said. For instance, cashiers will use icon-based flat-panel touch screens. Cooks can train — in another language if necessary — by watching a video screen propped over a french fryer.

Chick-Fil-A plans to test the system in 20 restaurants by July. And the restaurant chain is "80% sure" it will ink a $3 million deal with Radiant to roll out Windows CE at 100 sites per year, Bridges said. □

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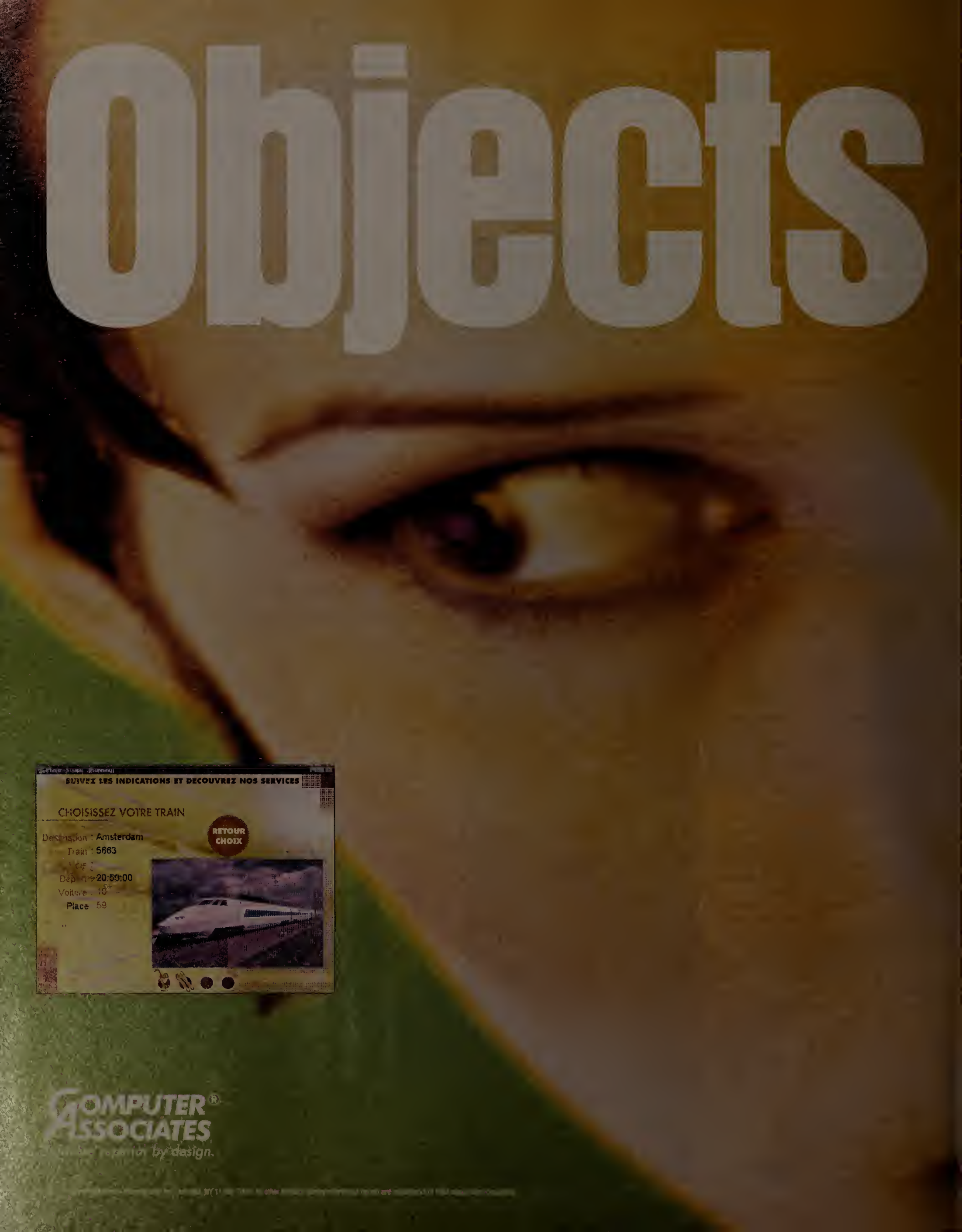
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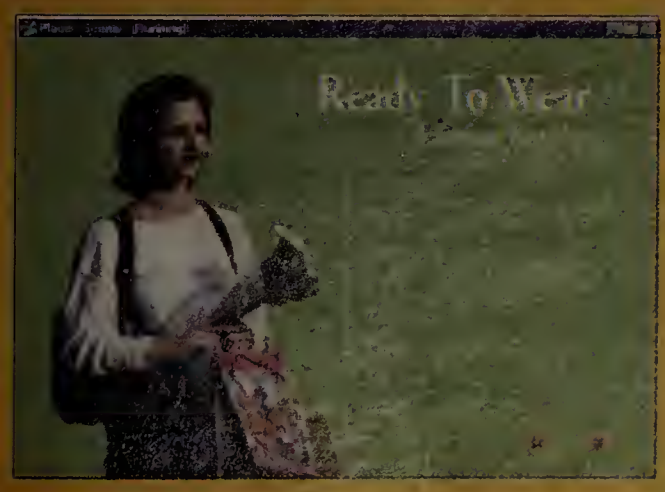

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Corporate training programs go to college

By Tim Ouellette
CAMBRIDGE, MASS.

COMPANIES ARE FINDING that generic courses may not deliver the best punch for their dollars. So the latest trend is to negotiate outsourcing contracts in which a university provides courses and technical degrees customized for a particular business.

In fact, 40% of large corporate training groups plan to create "corporate/university partnerships" this year, according to a survey of 100 business trainers. Survey results were released recently at a conference here on "virtual universities." The conference was sponsored by Corporate University Xchange, Inc., a New York-based consultancy.

The training deals can help alleviate the skills shortage by making employees more productive and by retaining employees who are interested in top-notch training. The groups that broker the training deals also ensure that courses are tailored to a company's needs. Examples of the specialized degrees include certificates in customer service, retail management and technical MBAs, with a heavy dose of technical training.

"If we can show recruits they can get a master's degree from Stanford University or Carnegie Mellon University [through our program], I think we will be able to attract them and retain them," said Allen Stein, director of United Healthcare Corp.'s Learning Institute in Hartford, Conn.

The survey found that by 2000, more than half of this custom training will be delivered via computer technologies such as the Internet and videoconferencing.

MAKING THE GRADE

Key criteria for choosing a university partner to supply custom degrees for corporate employees

- A shared vision
- Flexibility to meet changing degree requirements
- Close communication relationship with school
- Technology capability
- Performance measurement capability

Source: Corporate University Xchange, Inc., New York

For example, German auto and aerospace giant Daimler-Benz AG contracted with the University of Southern California (USC) in Los Angeles to train its midlevel and executive managers.

One reason USC won the deal: U.S. schools have better access to Internet and telecommunications technology to train workers worldwide, said Wolfgang Braun, Daimler-Benz's vice president for corporate executive development.

TRAINING FOR SUCCESS

Daimler-Benz students meet with USC professors once a week during the 40-week program via videoconference or Internet-based discussion databases. So far, 80% of the management program graduates have been promoted to work on international projects, Braun said.

United Healthcare also has seen an immediate payback from its year-old partnership with Rensselaer Polytechnic Institute (RPI) in Troy, N.Y.

The health services giant currently has 300 information technology positions open. Stein said the company saved $205,000 last year by outsourcing its technical and management training programs to RPI and expects to save $245,000 this year.

Previous training was contracted on a course-by-course basis from various vendors. Now, RPI acts as United Healthcare's training broker. If it can't provide the best course for a particular United Healthcare need, RPI subcontracts to other universities. □

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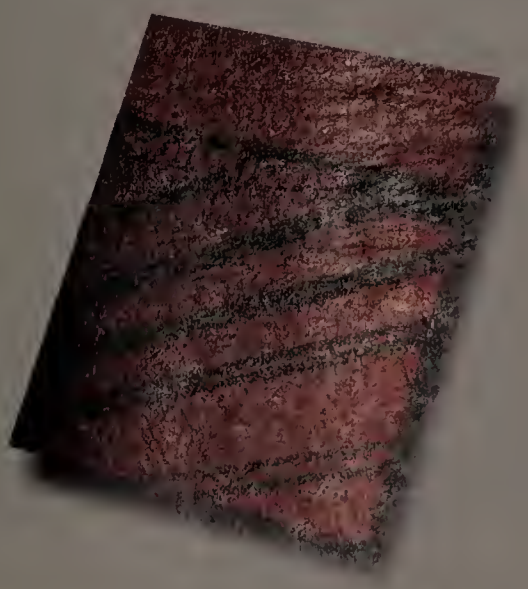

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Y2K snag hides in PC hardware

By Laura DiDio

BUSINESSES ARE going to have to take responsibility for year 2000 incompatibility problems that crop up between network operating systems and PC hardware, according to users and vendors.

The good news is that fixes exist for forward-thinking users.

MILLENNIUM STRATEGIES

The problem isn't with the network operating systems: IBM's OS/2 Warp Server, Microsoft Corp.'s Windows NT Server and Novell, Inc.'s NetWare will all be year 2000-compliant. The culprit lies within noncompliant PC hardware in the form of BIOS and Real Time Clocks that could cause operating system and application crashes.

On Jan. 1, 2000, the PC's Real Time Clock will roll over to either the year 2000, 1980 or 1900, depending on the make and model of the computer. While this may not be immediately apparent to unsuspecting end users, the glitch could have ugly repercussions.

And because of the high potential for incompatibilities among network operating systems and the scores of third-party hardware products, none of the three major network operating system vendors — IBM, Microsoft and Novell — will guarantee any of their products against year 2000 failures.

"This is a red alert to the general user populace. Any company that's lulled into complacency and thinks that their networks are safe because their operating systems are [year 2000-ready] could be in for a nasty surprise," said Dave Eisenlohr, vice president of data center operations at the Pacific Stock Exchange in San Francisco.

That year 2000 problem hadn't even occurred to Eisenlohr, who said the exchange has been mainly focused on upgrading its applications.

But the problem is especially serious for firms in vertical markets such as banking and finance, which are date-dependent. If unresolved, the year 2000 BIOS/Real Time Clock glitch could freeze system or network operations.

"Such a scenario could be disastrous," said Larry Tabb, an analyst at The Tower Group, Inc. in Newton, Mass. If a securities firm's systems were down for a day "damages could run into hundreds of millions of dollars. The onus is on the end-user community to scrutinize and fully test their sites," he said.

DANGERS AND HOPES

The BIOS/Real Time Clock problem is commonly found in older PCs that use Intel Corp.'s X86 series chips. But even newer Pentiums may be plagued with the glitch, said Karl Fielder, president and CEO of Greenwich Mean Time, Inc., a year 2000 consultancy in West Sussex, England (see chart).

However, there are options to circumvent the year 2000 BIOS/Real Time Clock problem. The easiest and most obvious is to test individual PCs and servers, said Bev Michalk, IBM's release manager for the year 2000 in Austin, Texas.

Vendors are also providing free software patches that fix most of the BIOS-related problems and can be downloaded free from their Web pages. IBM has released 164 such patches. Novell has more than three dozen patches available, said John Canfield, Novell's year 2000 product manager.

"For us, the best fix is to test, test and test aggressively to verify that all the hardware and software that we use is year 2000-compliant by the end of 1998," said Steve Letzler, a communications director at the National Securities Clearing Corp. in New York. □

BIOS FEAR

Year 2000 problems with noncompliant BIOS systems could crash PCs and cause applications to lock up. A recent test of 500 BIOS systems found:

- 93% of pre-1997 PCs failed
- 47% of 1997 PCs failed
- Results varied from PC to PC, even among BIOS versions identical in name and date
- 28% of failed BIOS systems claimed to be year 2000-compliant
- 21% of development tools could create noncompliant programs
- 4% don't know or recognize that 2000 is a leap year
- 4% have programs that will run only through 1999

Source: Greenwich Mean Time, Inc., West Sussex, England

Keep in time

Older 386, 486 and even some Pentium PCs are affected by the BIOS/Real Time Clock problem that resets the system date to 1980 when the computer reaches the year 2000. Do the following to quickly see if your system is affected by the BIOS bug:

- **Move the clock to within a few minutes of 2000, let it run over into 2000, and see if it successfully converts the date. If not, you will have to manually reset the date.**
- **The year 2000 is a leap year. Set the clock for Feb. 29, 2000, and make sure it handles that date correctly.**
- **Set the clock to Jan. 1, 2001, to test that date.**
- **Upgrade your system to the latest version of the client/server operating systems. Windows NT 4.0 and later releases, for example, automatically detect and fix most BIOS problems. IBM and Novell both have software patches available on their World Wide Web sites.**
- **If your BIOS can't be reset, get a replacement from the hardware vendor free or at a nominal cost. — Laura DiDio**

Xerox cuts costs, staff to refocus

By Stewart Deck

XEROX CORP. OFFICIALS last week said the copier maker and document management company will lay off 9,000 of its 91,400 worldwide workers, or about 10%, over the next two years. The company also will take a $1 billion restructuring charge.

"The continued adverse currency and pricing climate underscores the importance of continuous and, in certain areas, dramatic productivity improvements," said Paul Allaire, Xerox's chairman and CEO.

As part of its plan, Xerox will establish a central European operations center instead of running a center in each country. In the U.S., the company will close one of its four customer support centers and centralize its parts depots.

BACK ON TRACK

Xerox's president and chief operating officer, G. Richard Thoman, said the Stamford, Conn.-based company needs to renew its focus on adapting and leading the markets in digital technologies. Thoman came to Xerox last June from IBM, where he had a reputation for cutting costs as chief financial officer.

In its most recent quarterly financial report, Xerox profits were $525 million, a 23% gain from last year's $426 million for the same quarter. Revenue was $5.4 billion, only a 6% increase from the same period last year.

Jeanne Hanley, an analyst at Capital Reflections, Inc., a market research firm in North Granby, Conn., called the downsizing "a big positive" that should only help the company.

"Xerox has been good at coming up with great technology and then giving it away. Now they've restructured the company to realize the value of their technology," Hanley said.

"A lot of companies wait too long to do this kind of thing, until the financial performance starts to deteriorate. But Xerox has done it when they're in reasonably good financial shape," said Brian Eisenbarth, a market analyst at Collins & Co., a San Francisco investment house. □

Sun pitches server deal to disgruntled OpenVMS users

▸ *Migration won't be easy or cheap*

By Patrick Thibodeau

IN WHAT SEEMED a little like a car dealer's pitch, Sun Microsystems, Inc. last week began offering Digital Equipment Corp. users a "twice the normal trade-in allowance" deal on servers.

The offer appears particularly aimed at OpenVMS users. Sun suggested that those users may be worried about the impact of the pending merger between Digital and Compaq Computer Corp.

Digital officials, who set up a rumor-quashing World Wide Web site (*www.digital.com/quash/*) designed to put its OpenVMS users at ease, dismissed Sun's effort.

For users who take the bait, it isn't an easy switch, analysts said. Migrating from OpenVMS to Sun's Solaris platform isn't a simple option for most users, said Dan Kuznetsky, an analyst at International Data Corp. (IDC) in Framingham, Mass.

SMALL GROUP

Only those users who run packaged applications — about 20% of OpenVMS users, according to a recent IDC study — would be able to move easily to Sun's Unix systems, Kuznetsky said.

Migrating from OpenVMS to Sun's Solaris platform isn't a simple option for most users.

The costs required to reprogram, retrain and adopt new procedures for other users "would be too expensive for most people," he said.

There is, nonetheless, evidence of user angst about the future of OpenVMS.

"Obviously, we're nervous about it," said Ed Mulrean, director of networks and systems at Catholic University of America in Washington, which has been migrating from OpenVMS to Windows NT.

"We don't expect VMS to disappear, but at the same time, we're really not putting much new on VMS either," he said.

Digital can do more to reassure customers about OpenVMS, Mulrean added. "One doesn't get a good feeling that they really want to push anything with VMS because they don't really advertise it in the open press very much," Mulrean said.

Mulrean also said that Digital hasn't been able to get enough third-party application vendors to support the system. □

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Requirements Partially Met	2	2	9	17
Requirements Not Met	0	0	2	3
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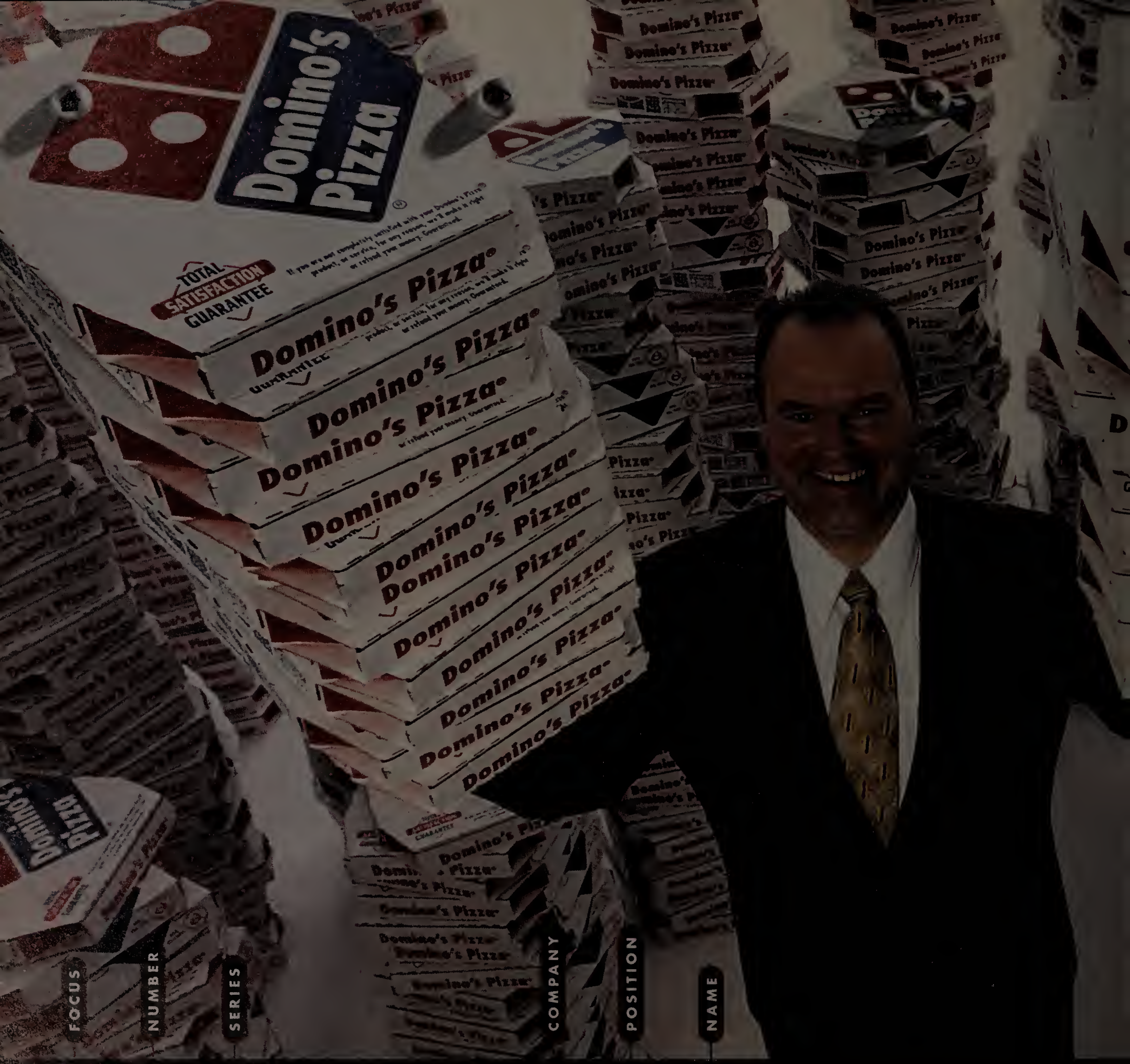

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Users seek precise network app info

By Patrick Dryden

NETWORK MANAGERS say traffic reports aren't enough. They want to know if a traffic snarl is caused by particular users or business applications, such as a Lotus Notes database or an SAP R/3 system.

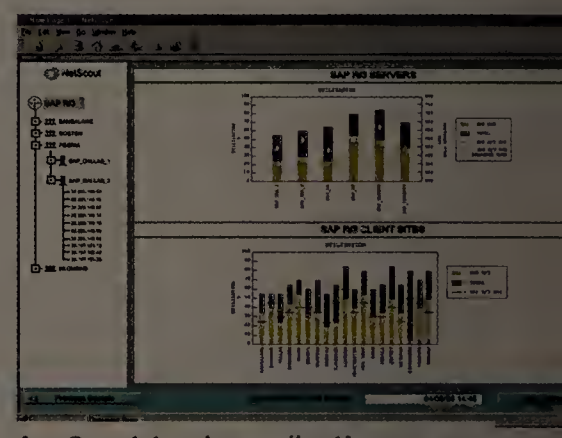
So NetScout Systems, Inc. in Westford, Mass., last week announced plans to put network performance data in an application context.

"Besides watching the general traffic flow, we need to know who is doing what and the response time from point to point for applications," said John Ray, a telecommunications engineer at LexisNexis in Dayton, Ohio.

AppScout software, due this summer, will provide browser access to simplified performance statistics gathered by NetScout's current products.

NetScout also is adding monitors that can watch high-speed internetworking devices and can run on Windows NT Servers in branch offices.

AppScout will combine troubleshooting capabilities with activity profiles for Lotus Development Corp.'s Notes, Microsoft Corp.'s Exchange, SAP AG's R/3 and intranet applications. AppScout profiles the network health of those critical applications during the most recent 48 hours so diverse groups — network and server troubleshooters, end users and developers — can spot slowdowns.



AppScout tracks application usage and response times across networks

NetScout users said they need that new perspective on networks to help them meet service-level demands and to defend their network performance.

"Questions about slow application response consume more of our time than any problem situation," said Dennis Thomas, manager of enterprise networking services at Tektronix, Inc. in Beaverton, Ore.

A network analyst at a national retailer, who asked to remain anonymous, said he spends half his time proving that the network isn't the cause of application performance problems.

Current NetScout users can add the base AppScout module for intranet applications for $12,500, plus $5,000 for subsequent application modules. Starting from scratch can get expensive: NetScout probes, server and management software will cost from $100,000 to $200,000 for a 1,000-user network.

Information systems groups need such tools to manage networks from a business perspective, said Theo Forbath, a senior consultant at Northeast Consulting Resources, Inc. in Boston. "You better be able to tell what applications consume each wide-area network circuit, so employees downloading images from the Internet don't affect the SAP R/3 functions that run the business," he said. □

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Ralph Nader and the SPA debate proposed software license law. Opinion, Page 33

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COMPUTERWORLD

QUICK STUDY

Hot trends & technologies in brief

Message-oriented middleware

DEFINITION: Message-oriented middleware (affectionately called MOM) lets applications on different computing platforms and networks exchange data reliably and securely. For example, message-oriented middleware lets mainframe, Unix or Windows NT applications communicate by sending data sets to message queues. Those queues hold the message securely until another application comes looking for that data. There doesn't have to be a direct connection between the different applications, and the sender doesn't even have to know which application or applications will be retrieving the data message for the queue.

FAQ: Messaging middleware

Q: *How does message-oriented middleware compare with other forms of middleware?*

A: A traditional form of middleware, called remote procedure calls, requires a direct — or synchronous — connection between applications. Messaging middleware works without that direct connection. Database middleware pulls data from different platforms back to the vendor's database software. Message-oriented middleware is platform- and application-independent. And object middleware, though very flexible and easy to use, can't scale to the large transactions such as message-oriented middleware.

Q: *How does IBM's market-leading MQSeries compare with Microsoft Corp.'s MSMQ?*

A: Microsoft's Message Queuing Server (MSMQ) is bundled with Windows NT Server, making it an entry-level middleware package. But it only delivers messages between different Windows NT or Windows 95 applications. MQSeries runs on almost every platform available, though it is more expensive. Still, Meta Group, Inc. in Stamford, Conn., recommends that users who have a mix of Windows NT and other platforms stick with MQSeries for the better deal.

Q: *Who are some of the other leading middleware vendors?*

A: Other leading product makers include Bea Systems, Inc., New Era of Networks, Inc., Talarian Corp. and Tibco, Inc. Companies that provide add-on products and consulting for MQSeries instailations include Candle Corp. and Boole & Babbage, Inc. Santa Monica, Calif.-based Candle boasts that it has more MQSeries engineers than IBM itself.

Q: *Is Internet push technology different from message-oriented middleware?*

A: The technology is similar to the publish/subscribe method some message-oriented middleware products use. Some applications "subscribe" to certain data types that get sent to the middleware server. Those applications automatically receive all data messages on that subject, whether they need them or not, instead of retrieving messages from a message queue.

HOW MESSAGE QUEUEING WORKS

1. Applications send data messages to the middleware layer. The messages can be data sets or action requests.

2. Those data messages are placed in subject queues that reside in the middleware layer and don't require a direct connection to the retrieving server or applications. Programs on multiple platforms can access the same subject queue.

JANELL GENOVESE

3. Applications can retrieve the messages from the message queue when they need them.

Packaged middleware makes inroads

By Tim Ouellette

AT ISSUE
Off-the-shelf vs. custom-built

MESSAGE-ORIENTED middleware makes distributed applications more flexible and less costly, and users are turning to it to handle the dirty work along the back alleys of their corporate networks.

So far, message-oriented middleware has flourished in data-intensive markets such as finance and health care, says Rehan Syde, an analyst at Cowen & Co. in Boston. Those companies need to quickly and reliably send vast amounts of data messages among high-end applications that reside on different platforms.

But before companies decide to try message-oriented middleware, market watchers say vendors must hammer out better standards among products and simplify ease-of-use and management features.

IN-HOUSE OPTION

Because of those problems, middleware gets most of its competition from the legions of corporate developers who choose to build their own custom links among corporate applications.

Those users spent nearly $6 billion last year developing their own code, while vendors rang up only $222 million in sales, says Karen Boucher, vice president at The Standish Group International, Inc. in Dennis, Mass.

The biggest fans of off-the-shelf message-oriented middleware are information systems folks who got hit with spiralling development and maintenance costs when developing their own middleware.

For example, up to half the cost of a major integration project goes to writing that custom middleware code and then maintaining it, according to The Standish Group.

That's because with custom middleware, each application must be altered with every change made to the overall workflow or business structure. Packaged message-oriented middleware products require changes only to the middleware itself, leaving applications untouched

The problem, though, is that each middleware product is proprietary, so users may be locked into one vendor when tying their applications together. And with roots in the mainframe and minicomputer world, most products are hard to use and are text-based.

"That's why you are going to see a lot more ease-of-use features" from the vendors, Boucher says.

And many new users may not need all the features of the full-scale middleware products available, but they want things such as reliable data delivery and security.

Instead, "pieces of messaging middleware will be present underneath a whole slew of new technologies -- from object request brokers to JavaBeans," says Ed Acly, an analyst at International Data Corp. in Framingham, Mass. □

QUICK STUDY ONLINE

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What if your to-do list was filled with things you needed to accomplish in the next 5 years, instead of the next 5 hours?

Maybe this should be on your list: 1. Get software that's naturally integrated. It makes your system simpler. It makes your life simpler.

Instead of spending time writing code to make things work together or correcting old patch jobs your predecessor slapped together, you can concentrate on the big picture.

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OPINION

Crime wave Thank heaven for computer crimes. We'd certainly all be dead from boredom by now without the vicarious thrills and chills delivered by hackers, crackers, phreakers and phrackers. And what a treat to have former U.S. Sen. Sam Nunn jumping up last week to issue a solemn warning about "an electronic Pearl Harbor" on its way.

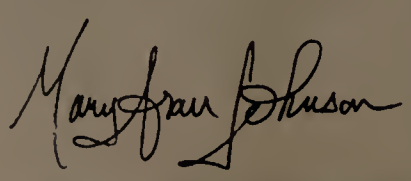
How bad is cybercrime really? If the breathless hyperbole is any measure, it's bad to the bone. Wicked bad. Off-the-Richter-scale bad. At a one-day meeting of government types, academics and CEOs last week at Georgia Tech, the incredibly bad figure of $10 billion was trotted out as the amount lost per year by U.S. businesses "victimized" by hack attacks and electronic theft (see story, page 41). Mind you, that's still a drop in the $8 trillion bucket of the U.S. GDP.

Supposedly, 80% of U.S. businesses have been hit by computer crime — although the level of seriousness is conveniently left to our imaginations. Another figure being bandied about by the American Society of Industrial Security claims that $300 billion is lost annually to "intellectual property theft." Hey, I'll see your $300 billion and raise you a kazillion.

The problem with the suspicious, largely meaningless mega-numbers on computer crime is the way they make a legitimately serious issue seem cartoonishly unreal. While press coverage of hackers focuses on the spiky-haired mischief makers who pester the Pentagon Web sites — really more of a nuisance than a crime — the real bad guys make damn sure nobody discovers their work.

Even worse, their silent partners are the companies actually robbed via unsecured systems. Their CEOs are often more worried about avoiding a public relations nightmare than warning other potential victims. What we need are more real stories with actual details, like the recent case of a disgruntled employee who time-bombed his company's systems, costing it millions in losses.

The solution is as boring as your mother extolling the virtues of vegetables: Secure your systems with appropriate levels of protection. Do it now. Don't make me quote that senator again.



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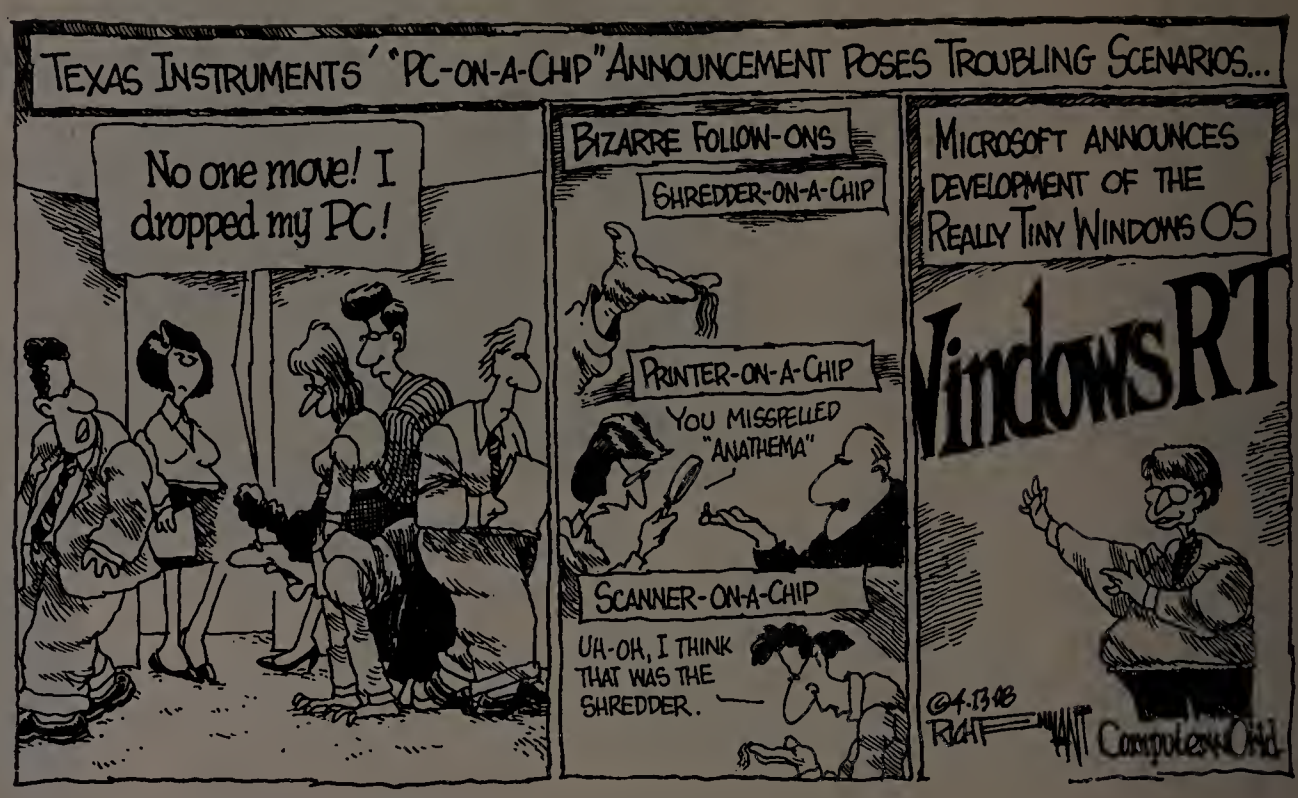


LETTERS

Do H-1B workers contribute? You bet your green card

I AGREE WITH Frank Hayes' point that the Information Technology Association of America's (ITAA) request to increase the number of H-1B visa foreign workers is falling short of what is needed ["ITAA strikes (out) again," CW, March 2]. But you could do with getting your facts straight about the nature of H-1B.

Does my H-1B status make my contribution less significant?

I am an English "guest" worker on this visa and work as an AS/400 consultant in Chicago.

H-1B is for many the best and usual method of obtaining green-card status. Your sponsor/employer will generally apply for this on your behalf. Many of my friends here who have green cards started on H-1B. They had the chance to try living here before committing long term. For myself and others who may be here temporarily, I find your assertion that H-1B workers make less of a contribution to be a little shortsighted. I have remained at my first client site since I arrived here two years ago. For a consultant, this is a longer-than-average placement. And my contribution has included an important role in a number of projects that should live on long after I return to England.

I have great affection for the American people, and this has been a great experience. But the American Dream isn't for us long term. Does this make my contribution less significant?

Steve Curtis
Synergy Software
Geneva, Ill.

Money matters, morons!

ONCE AGAIN, I am forced to wonder if anyone at *Computerworld* actually reads it.

On the cover of the Feb. 9 issue is a teaser saying "Top salaries aren't enough to hold on to your top IT talent" and directing us to page 82. Once there, we see methods that companies use to retain employees; salaries are hardly mentioned. Three pages later is another article, reporting that 70% of managers cite compensation as the primary reason for turnover.

Duh. It's the money, stupid. I'll keep saying it until someone at *Computerworld* gets it. In a free-market economy, there is no such thing as a labor shortage. It is simply the unwillingness of employers to pay for the talent they need.

Carl Dreher
Focus Research
Alexandria, Va.
focusrsrch@aol.com

A shutdown would show 'em

IN PROTEST of federal antitrust laws, I propose a general strike by IT workers, from Bill Gates on down. IT is crucial today to every major business and to the economy as a whole. A strike by even a minority of IT workers — especially executives and managers — could cripple many businesses and even the economy. Then the Department of Justice would have to back down. As philosopher Ayn Rand said, every evil ultimately depends for survival on the sanction of its victims.

Brad Aisa
Toronto
baisa@interlog.com

The view of a 'cube rat'

I READ *Computerworld*'s "Home sweet home" article [Feb. 23] with great interest; we are in the process of designing our new office space for the engineering department at Idexx Labs.

I'm writing a memo to the powers that be, arguing that private offices (with real walls and real doors) are a good business decision. Even a 10% gain in productivity times a team of six software developers over just one year — at a fully loaded manpower cost of $120,000 per year — results in a gain of $72,000. That is much more than the cost of Sheetrock and labor for a week. Many thanks from a cube rat.

Carl Lacy
Westbrook, Maine
carl-lacy@idexx.com

New motto for Silicon Valley

FRANK HAYES' column was great ["Ode to inefficiency," CW, Feb. 16]. Sometimes it feels like Silicon Valley should just be renamed "The Valley of Efficiency." Keep up the good insights.

Dan Schmid
Palo Alto, Calif.
schmid@stanford.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Thin-Client/Server Computing

Reducing the costs and complexities of application deployment, management, access and use.

A thin-client/server approach equipped us with a unique way of entering large amounts of data into a Windows-based system without having to upgrade the existing communications infrastructure. There have also been significant savings in running the application using a network-centric PC-based technology, provided by a Citrix solution, as opposed to two different mainframe systems.

CITRIX®

CITRIX

Thin-Client/Server Computing Takes Your Enterprise Further

When *Fortune* magazine recently named the "10 Tech Trends To Bet On," its number-one pick was centralized computing. But as you centralize, the question remains: What is the most efficient and cost-effective way to get there? Is there an existing technology that will do the job? Or will you have to wait for something new—and untested?

The solution that more and more companies are turning to is thin-client/server computing. It's available today. And it's from Citrix Systems, Inc.

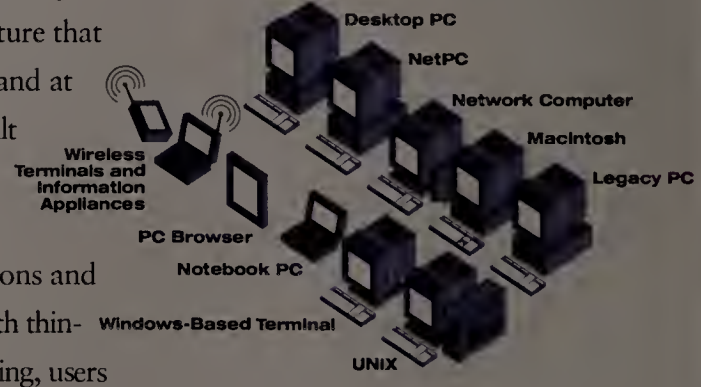
> "It turned out that our office saved around $6 million because Citrix software could help us do more with less available resources."
>
> **Truman Legg,**
> **Public Defender's Office, Orange County, CA**

With thin-client/server computing, you can extend your resources further than ever before. Because applications and data are deployed, managed, supported and executed 100 percent on the server. And client devices, whether "thin" or "fat," have instant access to these applications. Sessions run concurrently on the server, without sacrificing application performance.

Thin-client/server computing is not about devices or operating systems. It works with everything from the latest Pentium®-based PCs, to powerful workstations, Java™ network computers and legacy PCs. It's not about replacing or overhauling the network infrastructure that you've carefully—and at great expense—built up over the years. And it's not about scrapping applications and rewriting code. With thin-client/server computing, users have access to the latest 16- and 32-bit Windows® applications, from any device, from anywhere—even over dial-up connections—with performance that goes beyond conventional networks.

Join industry leaders

Industry leaders and users alike are rapidly recognizing the strengths of the Citrix thin-client/server computing approach. Last year, Microsoft licensed Citrix® MultiWin™ technology to create a multi-user version of Windows NT® Server 4.0 and future versions of Windows NT. IBM, Hewlett-Packard and other strategic partners have licensed Citrix ICA® (Independent



Citrix provides high-performance, thin-client software solutions that allow any client to access 32-bit Windows-based applications.

Computing Architecture), enabling any client to access Windows-based applications on the servers. Today, Citrix Systems has an installed base of over one million concurrent user ports servicing over three million users daily in companies like R.R.Donnelley, Honeywell and Bell Mobility.

Citrix is the answer

Why are more and more organizations choosing thin-client/server computing? 1) It's available right now, 2) it can reduce the complexity of your network so you can lower your total cost of ownership—by as much as 57 percent*—and 3) it offers enhanced benefits to IT managers and end users.

Management and scalability: Using thin-client/server computing, IT professionals can deploy, manage and support applications from a single location in minutes across a network of any size.

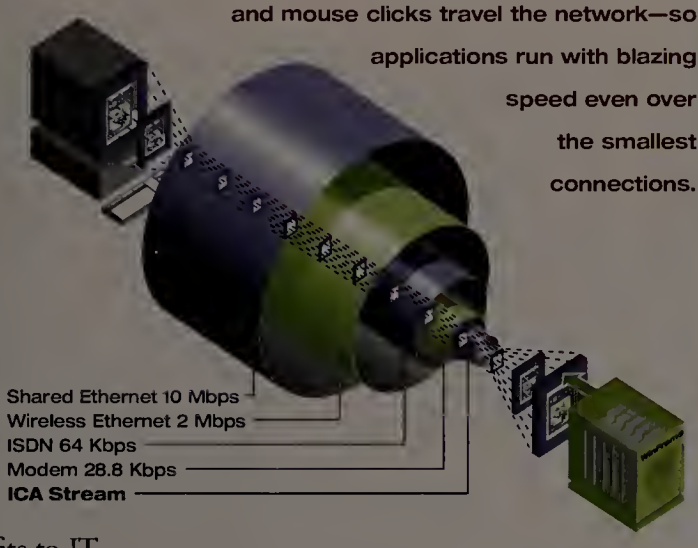
Access: Users can access 32-bit Windows-based applications from virtually any client device, including legacy 286, 386 and 486 PCs, Pentium-based computers, network computers, Windows-based terminals, UNIX® workstations and Macintosh® systems.

Performance: Thin-client/server computing can provide LAN-like application performance and superb responsiveness, even over low-bandwidth connections.

Security: Thin-client/server computing keeps vital information on the network and offers everyone access to the same centralized information.

With thin-client/server computing, you'll be able to make the most of your technology investment. Network and staff efficiency goes up while reliance on new hardware and technology goes down. The result? You lower your total cost of computer ownership.

With ICA, only screen updates, keystrokes and mouse clicks travel the network—so applications run with blazing speed even over the smallest connections.



WHAT IS A WINDOWS-BASED TERMINAL (WBT)?

You choose the right client for your needs.

One of the beauties of thin-client/server computing is the flexibility it provides for selecting client devices. Because in thin-client/server computing it's the function that's important, not the hardware.

Which device? A thin-client/server client device can be any network-connected system accessing a Windows-based application executing on a server.

Either "fat" or "thin." It doesn't matter whether the client system is a full-featured "fat" computer, like a desktop, notebook, workstation, or Java-based network computer, or whether it's a "thin" client, like a Windows-based terminal (WBT), or wireless information appliance.

With any O/S. It doesn't matter whether the client uses the Windows operating system, or a non-Windows-based platform like DOS, UNIX, Java, Mac OS or OS/2.

From any site. And it doesn't matter whether the client is at headquarters, in a branch office, at home, in a hotel, airport or anywhere else.

Same Windows performance

With Citrix thin-client/server computing, everyone gets the same familiar look and feel of Windows and the same high performance from applications. But they have the ability to select the client device that best meets their individual needs.

Citrix Provides Robust Solutions For Thin-Client/Server Computing

The Citrix family of thin-client/server computing solutions have been specifically designed to help take your enterprise computing further—toward the connectivity and manageability you want. They're the highest-performing, most cost-effective and most secure way to deploy, manage and access business-critical applications across your enterprise network.

Now both administrators and end users can do their jobs more easily—and better. And you get a better return on your existing infrastructure.

Citrix thin-client/server solutions extend Windows-based applications. In fact, Microsoft Corporation has licensed Citrix multi-user technology and endorsed Citrix thin-client/server technology.

Citrix solutions provide three key benefits:

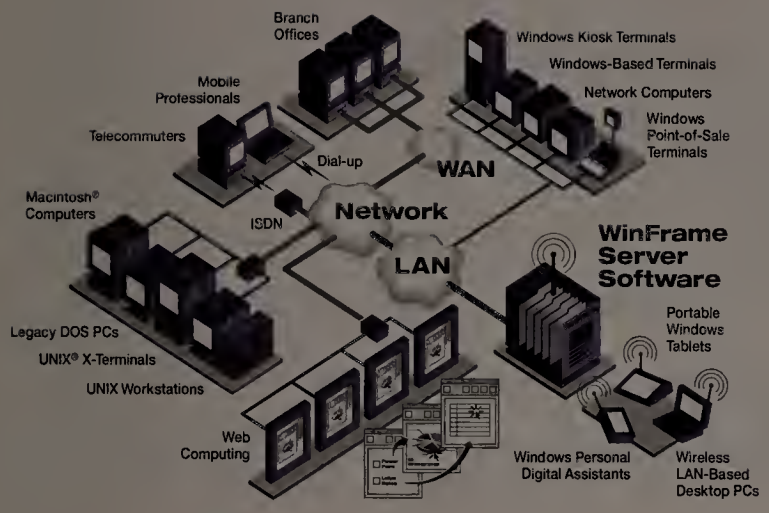
- Heterogeneous computing environments: Finally, you can make Windows-based applications available to everyone—and still let users keep their desktop of choice. Citrix solutions support all types of hardware, all types of operating platforms, all network connections and all LAN protocols. Your network can reach further, because it's not limited by your existing equipment.
- Enterprise-scale management tools: Citrix thin-client/server products give you enhanced management tools for applications on Microsoft® Windows NT-based networks. You can easily add servers without reconfiguring systems, administer applications across multiple servers from a single point and protect vital data and applications on the server.
- Seamless desktop integration: When you employ a Citrix thin-client/server solution, users enjoy the familiarity of a local desktop even though applications are running from the server. So the need for training is decreased and productivity is increased.

And because thin-client/server computing offers bandwidth-independent performance, local users can experience improved application performance, even when network traffic is heavy.

Extending Windows NT

The popular Citrix WinFrame® family of solutions already is enabling over 3,000 businesses worldwide to provide enterprise-wide access to Windows-based applications. The newest member of the Citrix family is the "pICAsso" Project, which received the *BYTE* magazine "Best Networking Tool and Application" award at COMDEX/Fall 1997.

> "Like a kid in a candy shop, physicians and their staff have applications at their fingertips."
>
> **John Ernst, Clarian Health**



With Citrix thin-client/server solutions, access to Windows-based applications is available to users with varied needs, across a broad range of locations.

Complete product family

1997 BYTE EDITOR'S CHOICE AWARD

The Citrix family of robust products ensures the best in application access, performance, manageability and security. Each meets the needs of demanding enterprise environments—providing the most advanced thin-client/server functionality in solutions designed to keep your business productive and efficient. And they work today.

CITRIX FAMILY KEY FEATURES AND BENEFITS

Feature-rich Citrix solutions provide connectivity for heterogeneous computing environments, enterprise-scale management tools and seamless desktop integration.

Any client device. Citrix makes thin-client/server computing possible using virtually any client device, including PCs, terminals, network computers and wireless devices.

Any connection. Citrix solutions can make connections over telephone lines, wireless devices, the Internet and more, making it ideal for extending bandwidth-hungry applications to users.

Application publishing. Administrators can easily deploy applications across multiple servers from a single point.

Application launching and embedding. Windows-based applications can be launched from or embedded into HTML Web pages.

Load balancing. For optimum application performance, administrators can group servers into "farms" and route users to the least-busy server.

Session shadowing. Administrators can see a user's display or control the mouse and keyboard, for easy support and training.

Local/remote clipboard. Users can cut, copy and paste between applications running on the server or desktop.

Drive mapping. Users have complete access to disk drives. Data from a server application can be saved to a user's local drive.

Printer mapping. Users can transparently access local printers. Mobile users can print remotely.

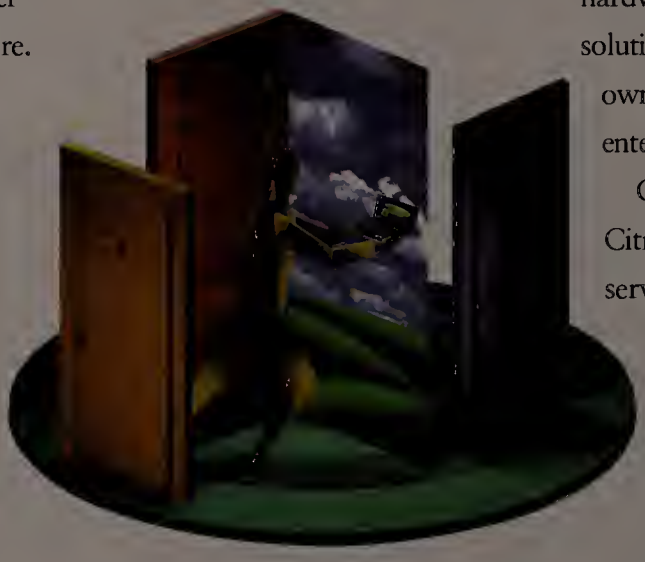
Port mapping. Peripherals can be accessed by applications running remotely from a server.

Audio support. Sound Blaster® Pro audio support makes a Citrix solution the ideal tool for education, training and the Internet.

Industry-Leading Partnerships Deliver Solutions You Can Trust

Every so often, a big idea comes along that everyone wants to get behind. And thin-client/server computing is one of those ideas. The Citrix Business Alliance is enrolling a growing number of industry leaders to focus on delivering reliable, scalable, cost-effective solutions for business-critical enterprise computing.

Through these partnerships, Citrix works to ensure that its thin-client/server technology functions seamlessly with other vendors' hardware and software. These partnerships are also working to create future products that will help you take full advantage of the benefits of thin-client/server computing.



Industry partnerships ensure the development of new products that give you more ways to use Citrix solutions.

Microsoft

The recent joint development agreement between Citrix and Microsoft Corporation represents a key partnership. But Citrix and Microsoft have been partners for years. In developing its WinFrame solution, Citrix licensed Windows NT source code, which serves as the base operating platform for the thin-client/server software.

In the development agreement, Microsoft licensed Citrix technology that provides multi-user capabilities for Windows Terminal Server. This multi-user server core provides the ability to host multiple, simultaneous client sessions on Microsoft Windows NT Server 4.0.

Compaq

A worldwide joint marketing agreement between Citrix and Compaq Computer Corporation promotes the benefits of thin-client/server computing to customers and channel members. These initiatives feature Citrix WinFrame thin-client/server software and Compaq® server hardware as an advanced solution to lower the cost of ownership for mission-critical enterprise computing.

Compaq has also included Citrix WinFrame thin-client/server software as an option in its innovative SmartStart™ program, an integration tool that optimizes platform configurations and simplifies the installation of servers and software. Inclusion in the SmartStart program simplifies configuration and lowers WinFrame's installation time on Compaq servers.

Hewlett-Packard

A licensing agreement with Hewlett-Packard Company permits the systems vendor to embed Citrix ICA thin-client/server technology for Windows and Java into future product lines.

This agreement will enable ICA-based thin-client devices and network computers to access standard Windows-based applications executing on Citrix-based servers, helping businesses reduce costs and increase efficiencies by extending Windows-based applications to more devices. Users will also benefit from the ability to access Windows and Java applications from the same device using Citrix thin-client/server technology.

Wyse

Through a long-standing partnership with Citrix, Wyse Technology and its line of Winterm™ terminals provide the broadest array of thin-client devices on the market. Winterm thin clients enable users to run standard Windows-based applications in conjunction with current and future multi-user application server software from Citrix.

Wyse® solutions enable IT professionals to choose the devices that best fit the user's application needs, including Windows-, Java-, browser- or host-based applications—or all in one. The Wyse approach to thin terminals provides universal access to business-critical applications without any sacrifice in application performance.

A Citrix thin-client/server solution is the right choice if your company has mixed hardware and operating systems, offices in several locations and mobile employees. It lets computing reach farther, delivering applications and information to any device anywhere, while helping lower your total cost of ownership. Here are five ways successful companies enhanced their operations with Citrix solutions:

Clarian Health, the second-largest private hospital in the country, implemented a Citrix solution to give more than 500 physicians and staff members fast access to patient information over low-bandwidth dial-up connections. Central management and deployment ensures the highest confidentiality and security for sensitive information.

Hewlett-Packard wanted to deploy human resources software to more than 25,000 employees throughout Europe. A Citrix thin-client/server computing solution enables applications and information to be managed centrally, while giving any employee real-time access to critical data for easy updating and tracking.

BM Polyco, a worldwide supplier of utility gloves for the industrial and retail markets, chose a Citrix solution to provide real-time information to suppliers and employees across a mixed environment of operating systems and client hardware. Thin-client/server computing reduced administrative overhead and simplified the deployment of business-critical applications.

The City of Tulsa Park and Recreation Department saved critical taxpayer dollars with a Citrix solution on an installed base of low-end hardware. Thin-client/server computing enabled the department to distribute a recreation automation package across more than 20 sites that enabled park users to reserve a facility or enroll in a class from any location system-wide.

The Bank of Walnut Creek realized a 40-percent savings in up-front capital costs with thin-client/server computing. The Citrix solution eliminated the need to purchase servers and hire network administrators at each branch, while providing access to business-critical applications for PCs and older teller terminals across an inexpensive frame-relay WAN.

Get a FREE *Big On Thin* CD-ROM and Take a WinFrame Test Drive

To get your **FREE** *Big On Thin* CD-ROM featuring the WinFrame Test Drive, simply fill out the information on this card.

Then, you can see the power of WinFrame and how it can simplify the deployment of business-critical applications to remote users. With the WinFrame Test Drive and your Internet access, you'll be able to dial into the Citrix server and experience LAN-like speed as you work with 16- and 32-bit Windows applications from any Windows-based device.

Name _____

Company _____

Title _____

Address _____

City, State, ZIP _____

Country _____

Phone ( ) _____

Fax ( ) _____

Email _____

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1. Which best describes you? (check one)
- ❑ MIS Manager/End User
- ❑ Systems Integrator/Reseller
- ❑ Other _____

2. What application(s) are you using and what users are you trying to reach?
- ❑ Application name(s) _____

_____

- ❑ Mobile or telecommuters over dial-up
- ❑ Branch offices over the WAN
- ❑ Users of thin-client devices
- ❑ Internet users
- ❑ Wireless LAN users
- ❑ Intranet users

3. What is your project time frame? (check one)
- ❑ 1–3 months
- ❑ 4–6 months
- ❑ More than 6 months

4. How can we be of assistance? (check all that apply)
- ❑ Please have a Citrix Sales Representative contact me.
- ❑ Please send me more information on WinFrame.

For a Thin-Client/Server Computing white paper, visit www.citrix.com/drive1

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186CW

Get your FREE *Big On Thin* CD-ROM featuring the WinFrame Test Drive today

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CITRIX®

Citrix Thin-Client/Server Solutions Reduce Cost And Complexity

Finally. Everyone on your network can work together. With greater speed. Performance. Ease. And control. With Citrix solutions you'll have the freedom to go beyond the limits of your network infrastructure, to increase your entire organization's productivity and to lower its TCO. Best of all, you can do it now.

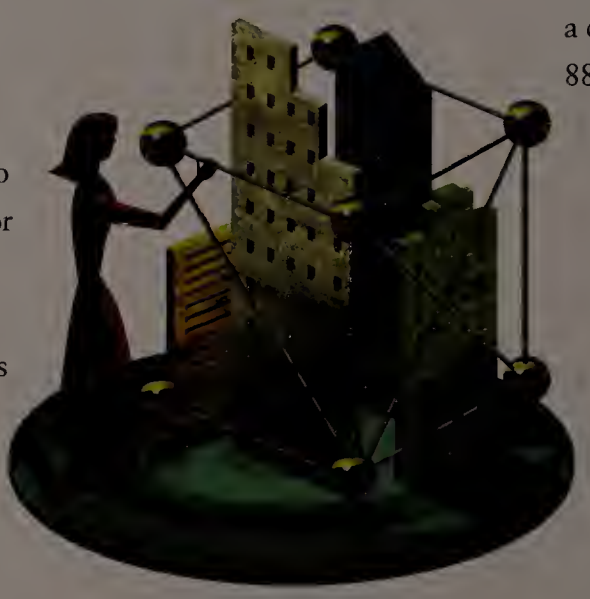
Thin-client/server computing is fast becoming the most reliable way to reduce the complexity and total cost of enterprise computing. And Citrix offers the best in thin-client/server computing.

The Citrix family of solutions delivers powerful application deployment solutions that meet the challenges facing IT professionals and the needs of end users. Here are the access to Windows-based applications for heterogeneous computing environments, enterprise-scale management tools and seamless desktop integration you've been waiting for.

Take a test drive online

You can experience the transparent, seamless, server-based performance that a Citrix solution provides using your Windows-based device. And you can do it today—from your own office—by accessing the Citrix server at our headquarters in Florida via the Internet. Just visit the Citrix website at http://www.citrix.com/drive1

You'll also find white papers and other information about thin-client/server computing, WinFrame and the "pICAsso" Project at our website. If you have more questions, just give u a call. You can reach Citrix at 888-564-7630.



A Citrix solution gives your entire organization access to business-critical applications, across different client devices, operating systems and network connections—even dial-in—without loss in application performance.

CITRIX®

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Fort Lauderdale, FL 33309
888-564-7630
http://www.citrix.com

*Desktop Clients, A Cost of Ownership Study, Spring 1996, Zona Research, Inc.

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Support the Internet Tax Freedom Act

Gov. Michael O. Leavitt

The Internet is shifting global power. It is reshaping governments, education systems, livelihoods and lifestyles. Today's children will never know a world without it.

Governors want the Internet to grow uninhibited into the economic force it promises to become. The 20th-century marketplace of consumer-to-merchant transactions is giving way to the 21st-century model, in which the merchant comes to the consumer online.

With the Internet emerging as a new way to do business, our system of taxation has to change as well. The governors were the first to recognize the ramifications of Internet growth on the ability of governments to provide services such as education. The governors then presented an equitable solution to Congress. The result is a revised Internet Tax Freedom Act that would put new Internet taxes on hold for at least three years while a commission develops a uniform taxation policy.

Today's haphazard tax structure is unworkable for electronic commerce.

Electronic commerce is the future, but its formative years are now. The 'net must advance with unfettered access. That's why the governors support a national moratorium on any new federal, state or local taxes on access, bit volume or bandwidth capacity.

We also have to clear a speed bump on the information superhighway: the current haphazard tax structure, which is unworkable for electronic commerce.

Last year, $8 billion in commerce was conducted online. That figure is estimated to be near $350 billion by 2002. Now, 30,000 jurisdictions across the U.S. have authority to impose sales taxes. They can't require sellers to collect it, however, unless the jurisdictions can demonstrate "nexus" — physical presence of that business within their boundaries. With the amorphous Internet, few can.

As more commerce shifts from the neighborhood vendor to the electronic storefront, what happens to the sales tax that funds half of all services provided to citizens in most states? Who takes up the slack?

We all do. Giving a tax break to online purchases would only create a loophole that ultimately will be paid by everyone — at the grocery store, on the mortgage payment and at income tax time. Or maybe the federal government would come to the rescue with a national sales tax administered by the IRS.

Now a solution is on the table. The governors' proposal is a new system of commerce that eliminates multiple and discriminatory taxation, protects Main Street businesses from competitive disadvantage and ensures that state and local governments, those most responsible for building roads, locking up criminals and educating children, can do so.

States would adopt a single simplified sales tax rate. Instead of 30,000 disparate tax codes, there would be no more than 50. Our proposal also would redefine "nexus" so the new system can be implemented. And the fix would be fashioned within the window of Congress's three-year moratorium on Internet taxes.

Critics have tried to reduce this complex problem to an easy sound bite: "no new taxes." In fact, the sales tax is an existing tax that currently isn't collected on a select class of transactions. A streamlined sales tax will unshackle businesses, governments and taxpayers and resolve an imbalance that otherwise would result in new taxes down the road.

We can put off a decision. But there is a time in the life of every problem when it is large enough to see but still small enough to solve.

The Internet is a dynamic force that offers access to worldwide information, goods and services with the push of a button. The more widespread its use becomes, the faster we all benefit. □

Leavitt is the governor of Utah. He is the National Governors' Association's co-lead governor for Internet development policy.

Danger signs for the Wintel empire

John Gantz

As PC shipments near 100 million units per year, it seems the Wintel Empire will go on forever. This unique marriage of a software company and a chip maker — which coupled Windows 3.1 with the 486, Windows 95 with the Pentium and now Windows NT with the Pentium II server — seems as solid as Gibraltar.

Do the combined forces of Intel and Microsoft constitute a monopoly? It sure seems as if they dominate the industry, dictating what users can buy at what prices.

So, do they?

As my colleague at International Data Corp. (IDC), Dave Vellante, pointed out in our annual client briefing last month, by revenues, they are not. Last year, Intel and Microsoft together brought in about as much money as Hewlett-Packard, or half as much as IBM.

But by market valuation — shares of stock multiplied by stock price — "Wintel, Inc." is the most powerful company in the world, with more than $300 billion — a lot more than the rest of the computer industry. The alliance has been lucrative, the symbiosis strong.

But whether apparent or not, the Wintel Empire is at a crossroads. The two partners, facing pressures on their flanks from different forces, may, in reacting, go in separate directions.

Of the two companies, Intel is the more vulnerable. It's reacting to market forces, not simply the U.S. government. In its core market, Intel has traditionally dominated via product cycles, milking profits from them while competitors are still ramping up. When those competitors enter the market and drive prices lower, Intel has its next product about ready to ship.

But with the sub-$1,000 PC catching on and the transition to 64-bit computing in the distant future, Intel is losing its favorable price differential. The first hint of how that will affect margins was in last quarter's disappointing earnings.

And if Intel is to compete in consumer markets — which it must if it's to remain a leader in microprocessors — then it will have to enter several low-margin commodity markets. That's a new business model for the company.

In the enterprise, Wintel will remain strong well into the next decade on the strength of NT, Intel's PC and server technology, and Microsoft's applications. But outside the enterprise — in the home, in cyberspace, in appliances and embedded systems — Wintel will be just another player. As those other markets ascend, the Wintel Empire will shrink as surely as Caesar's did.

Microsoft and Intel, facing pressures from different forces, may go in separate directions.

For the most part, IS will see little outward change. But slowly, the interests of Intel and Microsoft will diverge. And slowly, the design points of products will change. In a doomsday scenario, all this would happen at meltdown speed sometime early in the next decade, leaving a legacy of Wintel systems every bit as much deadweight as today's proprietary mainframe and client/server systems.

A more likely scenario is one of erosion so slow that we don't really notice it. Someday, perhaps, the names Intel and Microsoft will be as inspirational as the names Sperry and Burroughs. The computing paradigm will have changed, the Wintel era gone by.

Hopefully, by then the mutual fund managers running our pension funds will have long since moved our assets into newer, fresher stocks more in keeping with the new paradigm.

Whatever that is. □

Gantz is senior vice president at IDC in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

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Until now, "your company's information" was an abstract term—something impossible to quantify or put your finger on, much less see for all its potential. The result of separate and distinct islands of infor-

It gives everyone who

mation, most commonly known as databases, mainframes, UNIX and NT servers. Linking those islands is what EMC Enterprise Storage™ can do. We're finally making it possible to consolidate data across all major

needs it a clear view of your

platforms. So no matter where "your company's information" was created, you can protect it, manage it, make it available to all who need it. In turn, they can make your products or services available faster

company's information.

and more competitively than ever before. The EMC Effect. You simply have to see it to believe it. Call 1-800-424-EMC2, ext. 301. Or visit us at www.EMC.com.

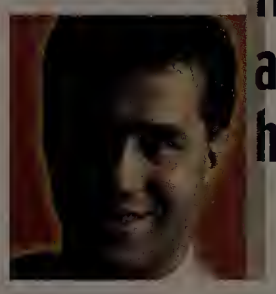
EMC²
The Enterprise Storage Company

To boost retention, inspire loyalty

Allan E. Alter

Forget about a cookbook, by-the-numbers approach to solving your IS labor crisis. If you think some magic combination of human resources policies will save you, you might as well call in a contractor to build a revolving door.

The critical part of the retention equation is the boss. If you don't shape up as a leader, your staff will ship out.



If you won't listen, don't inspire trust and act like a jerk, no policy will help you.

Last year, *Computerworld* surveyed 200 IS professionals who had seriously considered job offers from other companies. Four out of five turned down an offer to work elsewhere, though they were usually offered more money. What kept them loyal?

The No. 1 reason: the quality of the boss.

We've been running job-satisfaction surveys for years, and IS's rank and file tell us every year that stress levels are going up and job satisfaction is going down. The obscene workload is one reason; another is frustration with managers who don't respect them or listen. We received the following comments in last year's survey [CW, May 26, 1997]: "Sometimes you have to kick management in the teeth to get their attention." "They drastically don't understand my particular environment, and they don't realize how much they don't know."

We heard the same thing when we invited readers to tell off former bosses in anonymous letters. We received enough "Dear Ex-Boss" letters to fill two articles. "Dear Ex-Boss: You never showed any interest in the activities of your staff — you just tried to put your face in the right place at the right time." "If you can't trust your IS people to work from home, you may as well give it up and go sell hotdogs on the beach." "The one thing you did right — hire quality people — is offset by the fact that you don't listen to any of them."

Get the picture? If you won't listen, don't inspire trust, don't care about people and in general act like a jerk, no enlightened policy will work.

But so far, I've heard little about leadership and inspiring people to stay. The speeches, articles and studies I see focus on things to do, not on what kind of person to be.

Sometimes I think there's nothing IS managers want more than marching orders. Several years ago, I heard a prominent ex-CIO slam the IS press in a speech. He accused us of inaccuracy, misinterpretation and stupidity. So I introduced myself and asked what we stupid journalists could do to make him happier.

He wanted us to tell him what to do.

Too many IS managers approach problems in that spirit. They hope some pundit will lay it all out for them: the right answer, magic bullet, golden guideline or perfect process that will make them a hero. They'll take answers from anybody — even people they think are dumb.

No wonder the consulting business is booming.

As Bugs Bunny would say, what a bunch of morons. "Retention" is a fancy word for good old-fashioned loyalty.

If you want to keep people, you must transform independent, highly skilled people who could work anywhere they want into loyal comrades-in-arms who'll go to hell and back for you. That takes leadership. Focus on becoming a better leader. Think of the people who inspired you, and emulate them. That will do more to boost retention than any human resources handbook. □

Alter is Computerworld*'s department editor, Managing. His Internet address is allan_alter@cw.com.*

Charting the seven Cs

David Moschella

Why are some businesses so much more active on the Web than others? More practically, what can you learn from those business that have moved quickly into cyberspace and those that haven't? How can you apply their lessons to your organization?

To answer those questions, let's prepare two lists. The first consists of businesses that have rapidly taken hold on the Web:

- Books
- Stocks
- PCs
- Automobiles
- Travel

Now let's make a second list of businesses least affected by the Web. I suggest:

- Food
- Consumer durables
- Clothing
- Local services
- Insurance

What can we make of those groups? In November, I noted that the most obvious difference is that the Web has caught on first in businesses that can immediately provide real consumer savings. That seems clear enough. But do the lists have anything else in common?

Yes. In addition to significant cost savings, the markets that have most quickly migrated to the Web tend to share six other major attributes, all of which, conveniently, also begin with the letter C.

- **Choice.** The greater the degree of product variety and consumer choice, the more advantages an infinite virtual space has over a limited physical one. Think Amazon.com.
- **Customization.** The more demand there is to configure a product to an individual's specific needs, the greater the value of the Web's mass customization capability. Think cars, PCs and travel.
- **Consistency.** The greater the predictability and consistency of product quality, the more comfortable consumers are buying a product sight unseen. Think books, CDs and stock shares.
- **Convenience.** The more value there is in around-the-clock service and relative customer anonymity, the greater the Web's advantages over traditional store operations. Think stock trading and pressure-free car and travel pricing.
- **Change.** The more frequently existing products change or new products become available, the greater the value of getting the latest information immediately. Think stocks, travel and PCs.

To see how much your business can benefit from the Web, run it through this filter.

- **Community.** The greater the desire of individuals to share and exchange information, the more useful the Web's ability to support community-generated content. Think books, cars and PCs.

Now take a minute and think about the second list — food, consumer durables, clothing, local services and insurance — in terms of those seven dimensions. Although some items do well in some categories, they all tend to fail in others. How much customization can there be with groceries or change in insurance or community-building around refrigerators?

To assess the likely impact of the Web on any given industry or business, run it through this simple 7C examination. How effectively can your business take advantage of the Web's lower Costs, greater Choice, simpler Customization, inherent Consistency, potential Convenience, real-time Change and dynamic Community building? How do those ratings compare with the ratings of today's leaders? □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

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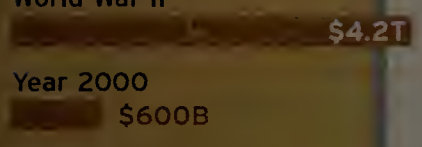
Briefs

GLOBAL DISASTER?

Industry experts say year 2000 issues could cost up to $600B worldwide in terms of glitches, network downtime and management hours.

Some disasters and their costs



*January 1994, Northridge, Calif. (all figures in 1997 dollars)

Source: Merrill Lynch & Co., New York

Bell training

Bell Canada will use the Symposium World Wide Web-based learning system from Centra Software, Inc. to provide training to all its systems engineers. Symposium combines computer-based training, live application sharing, discussion forums and audio conferencing. Bell Canada plans to use the software for other classes at a later date.

Wang absorbs Olsy

Officials at Wang Laboratories, Inc. in Billerica, Mass., said they expect to take an extraordinary charge of up to $45 million before taxes in the quarter ended March 31. The charge is related to the integration of Olsy, the services unit of Olivetti SpA that Wang acquired last month for about $390 million.

Patient analysis

Ingalls Memorial Hospital in Harvey, Ill., has purchased an Internet-based patient outcomes profiling and benchmarking database from Care Management Science Corp. in Philadelphia. The CaduCIS Net system was designed to help analyze preventable patient complications using standardized risk assessment and outcomes measurement methodologies.

Business savvy is CIO's best weapon

By Thomas Hoffman

HONORIO PADRON got his first retail itch in the mid-1980s when, as a NASA engineer, he jumped at an opportunity to open some hamburger joints that targeted visitors to the space center.

Hustling between both jobs, Padron managed within four years to build up a $15 million enterprise comprising 23 restaurants in Broward County, Fla., and two in Dade County, Fla., only to see it crumble when tourism fizzled following the January 1987 explosion of the *Challenger* space shuttle.

That business experience, combined with previous stints as chief information officer at Burger King Corp., Flagstar Corp. and PepsiCo, Inc.'s restaurant division, should serve Padron well in his new role as CIO at CompUSA, Inc.

Padron "is a bright, savvy business guy who happens to understand technology — and not the other way around" like many CIOs, said Paul Daversa, president of Resource Systems Group, Inc., a Stamford, Conn.-based headhunter who recruited Padron to Pepsi from Flagstar.

CompUSA CIO Honorio Padron says re-engineering experience at Flagstar, Burger King and PepsiCo should help him attract "the customer of the future."

Padron is charged with helping the Dallas-based computer retailer rethink its business processes and lay the technological groundwork to support one-stop shopping for customers of its retail, technical training and other products and services.

CompUSA is having trouble keeping up with its double-digit growth. Earlier this month, its executives warned analysts not to expect any significant sales gains in the fourth quarter following flat results in its third quarter, ended March 28.

"We're a preteen — our body is a little larger than our brain — and we need less-complex systems" to support the company's rapid growth, said Jim Skinner, executive vice president and chief financial officer at CompUSA.

Simplicity has worked well for Padron, a 45-year-old father of two. While he was CIO at Burger King in the mid-1990s, Padron led a companywide re-engineering initiative that included streamlining a 700-point

CIO, page 40

'Clean slate' approach smooths medical care

▸ *New hospital built without legacy systems*

By Jaikumar Vijayan

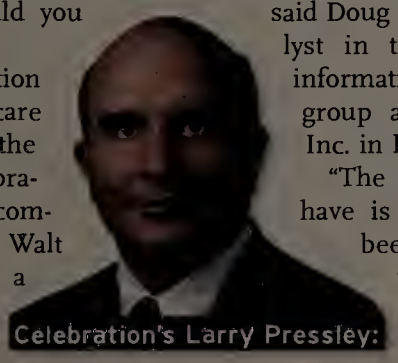
IMAGINE TAKING ON the job of building systems for a brand-new hospital without having to worry about making them talk to quirky old legacy systems in other parts of the organization. What would you do?

At Celebration Health, health care provider for the town of Celebration, a planned community built by Walt Disney Co. on a 5,000-acre tract near Disneyland in Orlando, Fla., information systems made sure everything talked to everything else. Patients can make one telephone call to schedule a doctor visit, reserve time at the rehabilitation center or get test results. And they fill out medical forms only once; the information is then available to any hospital department and to patients themselves over the World Wide Web.

Celebration Health is managed by Florida Hospital, a 1,600-bed health care provider that runs six separate campuses in the Orlando area.

The hospital isn't just an example of how technology can be used to improve customer service, but also of the level of integration necessary to make an effort such as this work, said Doug O'Boyle, an analyst in the health care information technologies group at Meta Group, Inc. in Reston, Va.

"The advantage they have is that they have been able to start with a clean slate and build an entire IT architecture from scratch without having to bother about legacy systems like other organizations have to," O'Boyle said.



Celebration's Larry Pressley: **At most health facilities today, "systems rarely talk with each other"**

One result of that attempt is that every service offered by the campus, from surgery room scheduling to patients' lab results to claims processing, is integrated on a single network that ties together software and applications that run on a collection of Unix and Windows NT systems.

Systems, page 40

New breed manages projects

By Randy Weston

MICHAEL CROMAR is a certified public accountant by profession. But the chief financial officer at GATX Capital Corp. in San Francisco found early in his career that he also needs to be a technology advocate.

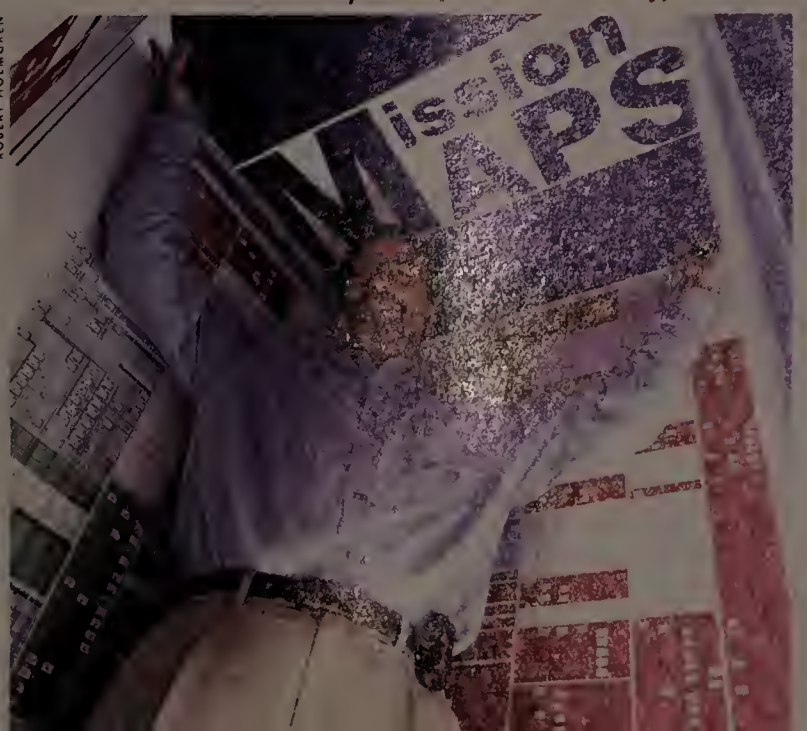
He is among a new breed of information technology project managers: businesspeople who are finding ways to bolster their technology know-how.

Some, such as Cromar, simply picked up the skills along the way.

"I got into accounting management 21 years ago in a company whose accounting systems were entirely manual," Cromar

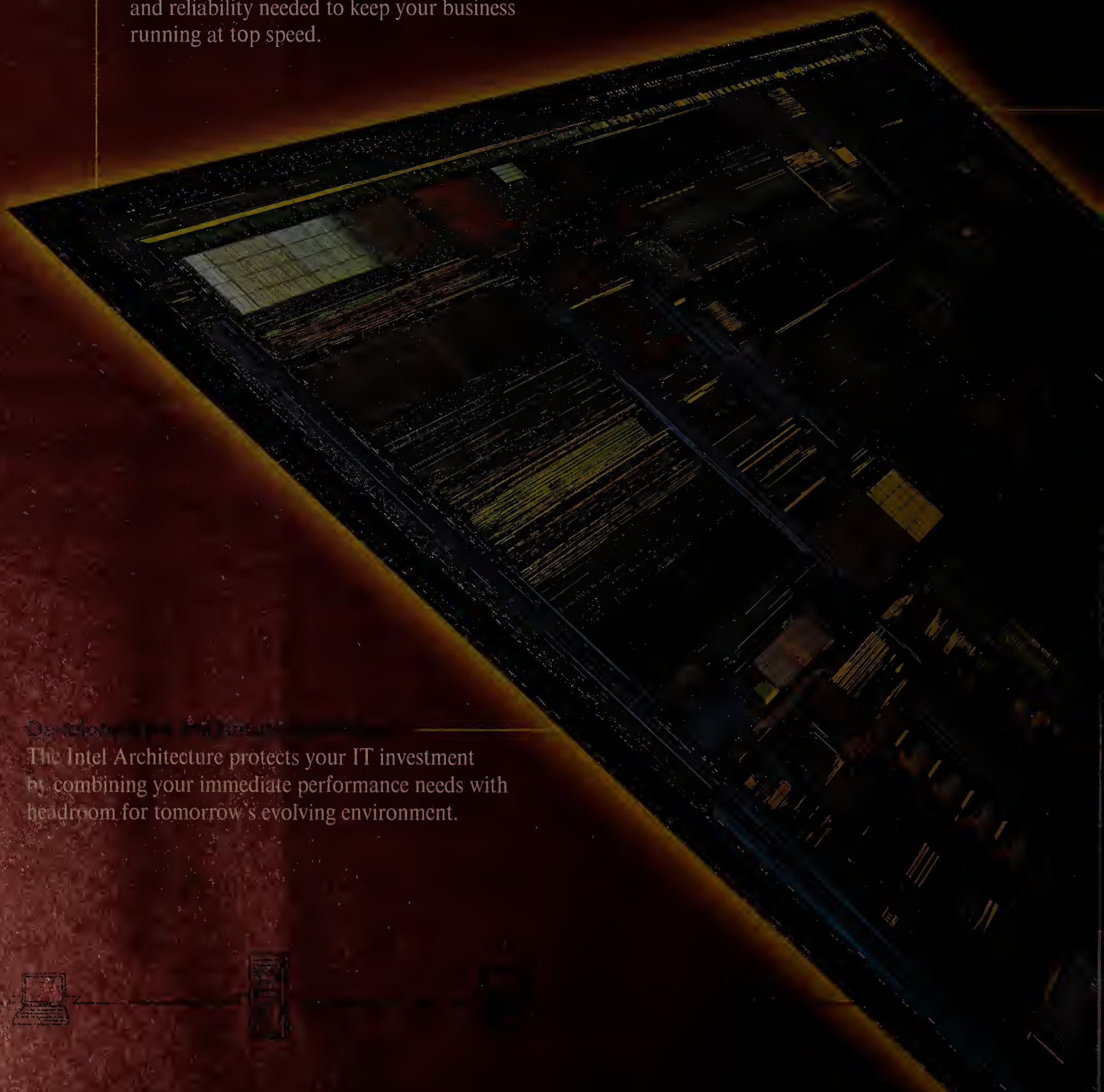
New breed, page 40

▼ **As a CPA two decades ago, GATX Capital CFO Michael Cromar became an unlikely champion of technology**

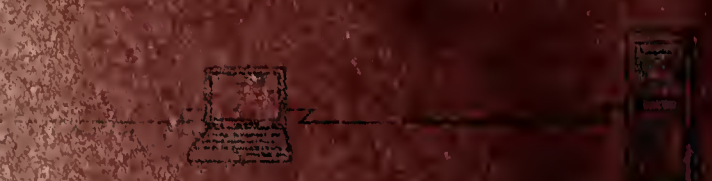


The blueprint for the

The Intel Architecture delivers the performance and reliability needed to keep your business running at top speed.

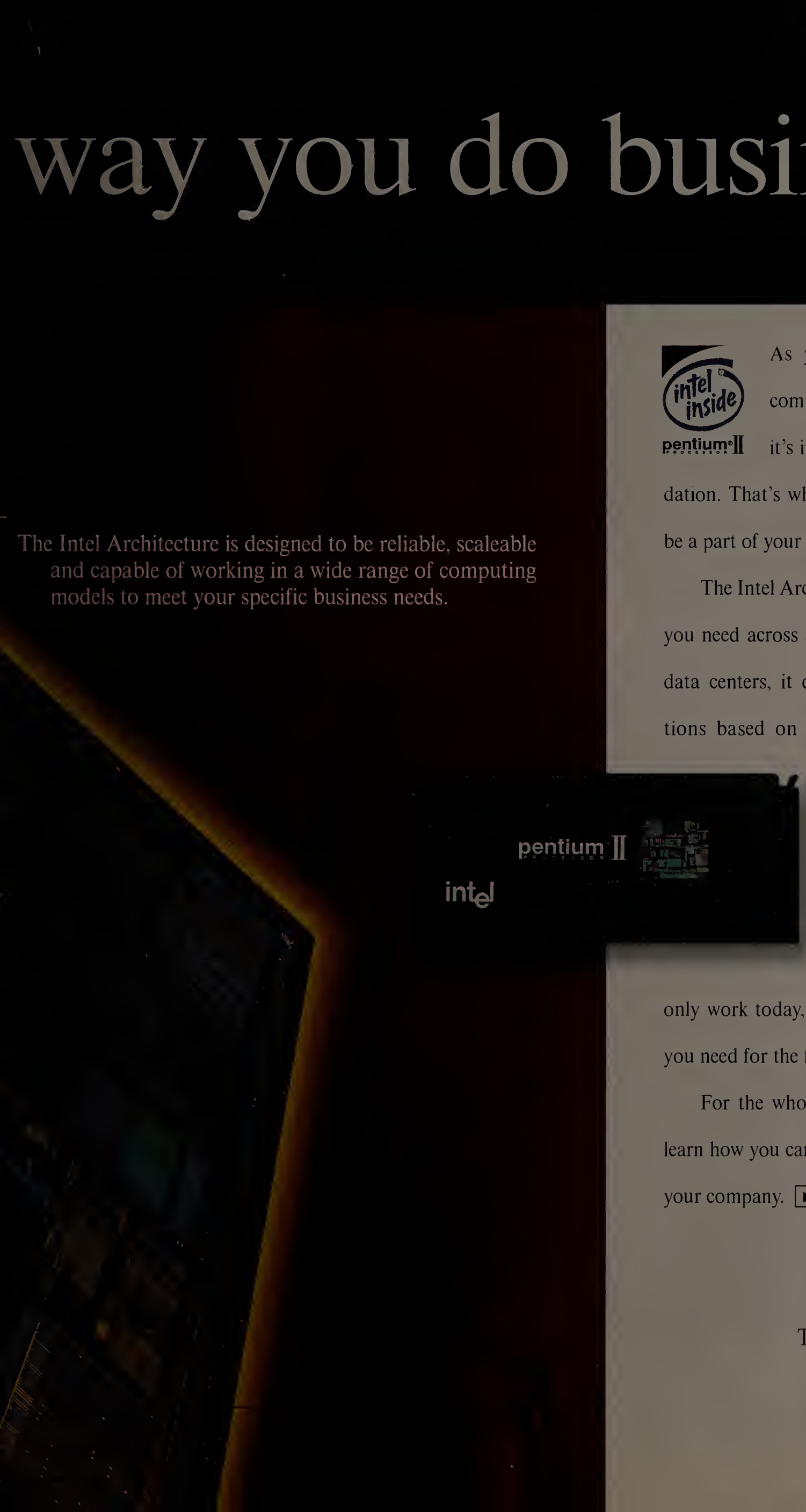


The Intel Architecture protects your IT investment by combining your immediate performance needs with headroom for tomorrow's evolving environment.



way you do business.

The Intel Architecture is designed to be reliable, scaleable and capable of working in a wide range of computing models to meet your specific business needs.



intel inside
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As you build and maintain your company's computing environment, it's important to have a strong foundation. That's why the Intel Architecture should be a part of your plan.

The Intel Architecture offers the performance you need across all platforms. From desktops to data centers, it delivers reliable, scaleable solutions based on proven technology. The same technology found in the Pentium® II processor. Intel's most powerful processor ever. Plus, you get solutions that not only work today, but also provide the headroom you need for the future.

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Top execs rate tech a priority

By Tom Diederich

TOP EXECUTIVES at major U.S. companies said protecting their corporate information systems from intruders and keeping pace with technological advances will be their biggest challenges in 2005, according to a recent national survey.

In the survey, commissioned by Deloitte & Touche in Wilton, Conn., senior executives at 409 large U.S. companies were asked to predict the state of the business environment in 2005 and to name issues that will affect their professional and personal lives.

A whopping 79% said they would probably be worried about hackers, and 78% said keeping their companies on the cutting edge of technology would be a concern.

Companies that took part in the survey group had median revenue of $2.5 billion.

MORE OUTSOURCING

The survey, conducted by Yankelovich Partners, Inc. in Stamford, Conn., also showed that 61% of the executives expect their companies to increase outsourcing within the next seven years.

Deloitte & Touche said 77% of the companies currently use outside expertise for some business functions, with 66% of that segment reporting that they now use outside experts for information systems.

According to the survey, 69% of the executives indicated that attracting and retaining key front-line employees will be even harder in 2005, with 61% saying the same will be true for executive positions.

Asked to name the most influential thinker of the past 100 years, 20% of those polled said it was Bill Gates, chairman and CEO of Microsoft Corp. in Redmond, Wash.

Deloitte & Touche said 24% of the executives anticipated that Microsoft will top *Fortune* magazine's list of America's Most Admired Companies in 2005.□

SHORT

Home computing

Microsoft Corp. and Sony Corp. last week announced plans to cross-license key technologies to create products for a home networking environment. The move is one of several designed to extend the number of Internet users by making computing devices easy to use by nontechnical consumers. Sony plans to license Microsoft's Windows CE operating system for use in certain future products. Microsoft plans to license Sony's Home Networking Module for use with certain versions of Windows CE.

CIO relies on business savvy

CONTINUED FROM PAGE 37

restaurant inspection to 50 key areas that customers care about most, such as cleanliness, speed of order and quality of product.

Padron likes to move fast, which helps explain why he prefers racquetball to golf.

Under a 120-day plan he just completed for CompUSA, Padron has set the wheels in motion for a new systems architecture that will replace 80% of the retailer's existing systems over the next 18 months. He plans to replace the bulk of CompUSA's client/server-based systems with a multimillion-dollar enterprise resource planning (ERP) system, which he will select this month.

CENTRALIZED COMPUTING

The ERP system falls under a two-tier systems strategy that Padron is helping create for CompUSA. Under that approach, a set of revenue-generating systems, such as a forthcoming World Wide Web-based order-entry system, should complement its efficiency-based ERP environment.

To support that centralized computing approach, Padron will need to stem the 50% annual turnover that has been hobbling CompUSA's 300-person information systems staff. To do that, Padron worked with human resources director Mel McCall to grant pay raises to most of his staff.

That meant double-digit pay increases for many staffers, though raises ranged from 2% to 20% or more, Padron said.

"One guy told me that if we got the pay raises through by March 31, he'd shave his hair off," Padron said. Keeping to that deadline, Padron sheared the employee in front of a boisterous systems staff at a local Marriott Hotel earlier this month. Said Padron of the close-cropped staffer, "He's a real sport."

Skinner said he is hopeful that Padron's ability to get the job done in the restaurant industry will carry over to CompUSA. To that end, Skinner said he will know Padron has performed his job effectively if the new systems are more cost-effective and help the company react to changing business conditions faster.□

New breed of IT project managers emerges

CONTINUED FROM PAGE 37

said. "I wanted a better way to do things. I wanted my job to be easier. The only way I could see to do that was to put in some automation."

So Cromar became an unlikely champion of technology. "I had to fight my boss and his boss and the negative perceptions they had of computers," he said. Cromar said he persuaded his company to hire a computer systems person and to buy hardware and software.

The fight led to more job opportunities, and his career has since slowly climbed two ladders — a CPA ladder and an information systems one.

At GATX, Cromar is leading a massive implementation of SAP AG's R/3. The project calls for rewriting much of the code in R/3 to tailor it to the needs of the leasing and asset management industry.

THE SCHOOL ROUTE

While some IT leaders such as Cromar forged their own path, some are turning to universities for help as colleges begin tailoring their business school curricula to include both business and technology disciplines.

For example, Kennesaw State University near Atlanta offers four technology courses in its MBA program.

Rodney Alsup, assistant dean for the College of Business graduate programs, said the college teaches that graduates must be able to manage business processes, projects and people.

"We preach and teach that all technology starts off as a project to support some business process, then we go ahead and integrate that learning into curriculum and try to keep the courses and curriculum as current as CIOs and CFOs demand," Alsup said.

TWO-WAY STREET

The need for mixing business and technology know-how cuts both ways, Alsup said. About 20% of the MBA students at Kennesaw come from the IS ranks.

Some corporations also embrace the idea of cross-pollinating IS with business-savvy employees. Kennesaw State has a contract with BellSouth Corp. in Atlanta to run an on-site MBA program at the regional Bell operating company for managers at BellSouth's IT organizations.

Some businesspeople find themselves knee-deep in technology projects as a matter of necessity, mainly to make their jobs easier and assist IT departments in keeping up with the barrage of niche products constantly hitting the market.

"It is getting to the point where it is up to department heads to search out those technology tools," said Brad Wagner, product engineering manager at Trek Bicycle Corp. in Waterloo, Wis. "Our IS people can't keep up with everything that is going on out there right now."

Wagner initiated a project at Trek to implement a product data management system. He teamed with Kevin Clayton, a systems analyst in Trek's IS department who came to the IS ranks via the business side of manufacturing.

Because Clayton had a background in engineering, he said, it allowed him to more easily give the users what they wanted in the form they wanted.

"There are two schools of MIS," Clayton said. "The old school is where services are dished out and rationed to users. And the new school is that users should be empowered to do everything they are responsible for, and IS is to provide the tools for them to do that. I look at my job as what is the best way for users to do their job."□

Systems smooth medical care

CONTINUED FROM PAGE 37

"There are plenty of facilities today that have physicians' offices, specialists, rehab centers and hospital facilities physically located in one medical complex," said Larry Pressley, chief information officer at Celebration Health. "But their systems rarely talk with each other."

To avoid that, IS officials at Celebration defined ahead of time what kinds of services they wanted, then gave the job of integrating the systems to the vendors involved, bringing them in at the design stage of the $5.5 million project.

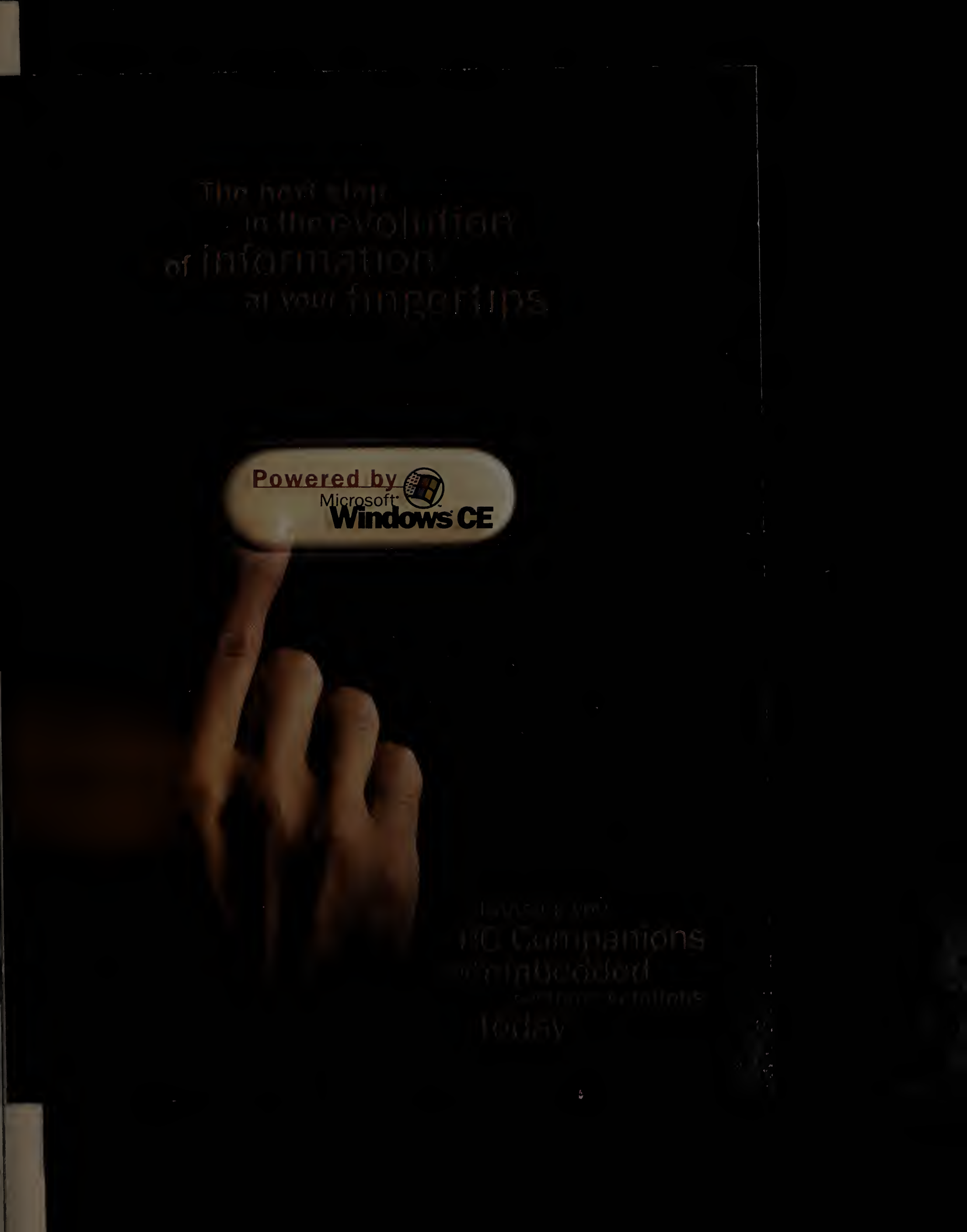
"We basically told each vendor what they needed to do to become part of the contract. . . . We gave them the data and told them to find a way to integrate" their software with systems from other vendors, Pressley said.

The effort involved tying together a range of disparate software from vendors such as Epic Systems Corp. in Madison, Wis., which supplied the physician management system; US Patriot in St. Louis, which provided the scheduling systems; and the Agfa Division of Bayer Corp. in Ridgefield Park, N.J., which provided a picture archival system.

Another component was an internally developed hospital information system.

A major portion of the application software runs on 15 IBM R50 servers connected to a large RS/6000 multiprocessing Unix machine. The network itself is based on an Asynchronous Transfer Mode backbone running on a dedicated Synchronous Optical Network ring that Sprint Corp. helped Celebration Health develop.

The different systems communicate with one another using an electronic data interchange-like protocol called HL7. Basically, the protocol takes a transaction from a physician support system, for instance, and converts it to a standard HL7 format, which can then be recognized by other systems.□


The next step
in the evolution
of information
at your fingertips
Powered by
Microsoft
Windows CE
PC Companions
Embedded
Today

Stay in touch, on the go, with Windows CE 2.0

Why are companies like Litton/PRC and Vail Resorts adopting the Microsoft® Windows® CE 2.0 platform? Because their employees need information at their fingertips, whether at their desks, at home, on the slopes or anywhere in between. And with PC Companions, such as Handheld PCs and Palm PCs, powered by the Windows CE operating system, they have the perfect platform for mobile information access.

Here's why: Windows CE 2.0 makes them feel at home, with the familiar Microsoft Windows interface, Pocket versions of their favorite applications and ActiveSync™ technology for effortless, bidirectional data sharing synch between desktop and the road. With e-mail, scheduling, tasks, calendar, contacts and Pocket Internet Explorer built-in to the Palm PC and Handheld PC (H/PC) and Microsoft Pocket Word, Pocket PowerPoint® and Pocket Excel also built-in to the H/PC, Windows CE lets them be productive right out of the box.

Users like its familiar feel; so do the information professionals who support them. With open standards, extensive connectivity options and hundreds of off-the-shelf programs, Windows CE-based products feature the supportability and extendibility IT (information technology) professionals count on.

All this is available today, from dozens of hardware vendors. Here's how two companies are using Windows CE–straight out of the box–so that their employees can work on the run.

Litton/PRC

How do executives stay up to date no matter where they are, at Litton/PRC, a large federal information technology contractor? They let their Handheld PC handle it. With this small computer powered by Windows CE, management can access the day's sales, current employee retention numbers, or even how many new employee requisitions are open.

It's all made possible through Mobile Pedestrian (MOPED), an executive information application available on Litton's company intranet. A wide variety of company performance metrics are available through MOPED, which employees access through launching **Pocket Internet Explorer** on their Handheld PC, then selecting the MOPED intranet site. For even faster access, users can choose this site as a Favorite for almost instantaneous viewing. At a meeting and need some numbers to answer a colleague's question? No problem. Just think, no more time spent rounding up information to e-mail it later. Instead, it's at your fingertips with MOPED and a Handheld PC.

And it didn't take a rocket scientist to make the application run on Windows CE. Said Randy Allen, chief engineer for Litton/PRC, "The cool thing about it is that we didn't have to do anything to the Handheld PC. The Web

www/microsoft.com/windowsce/itsolutions/

browser is all we need. The only thing we've actually done on the Handheld PC is build forms in HTML."

Vail Resorts

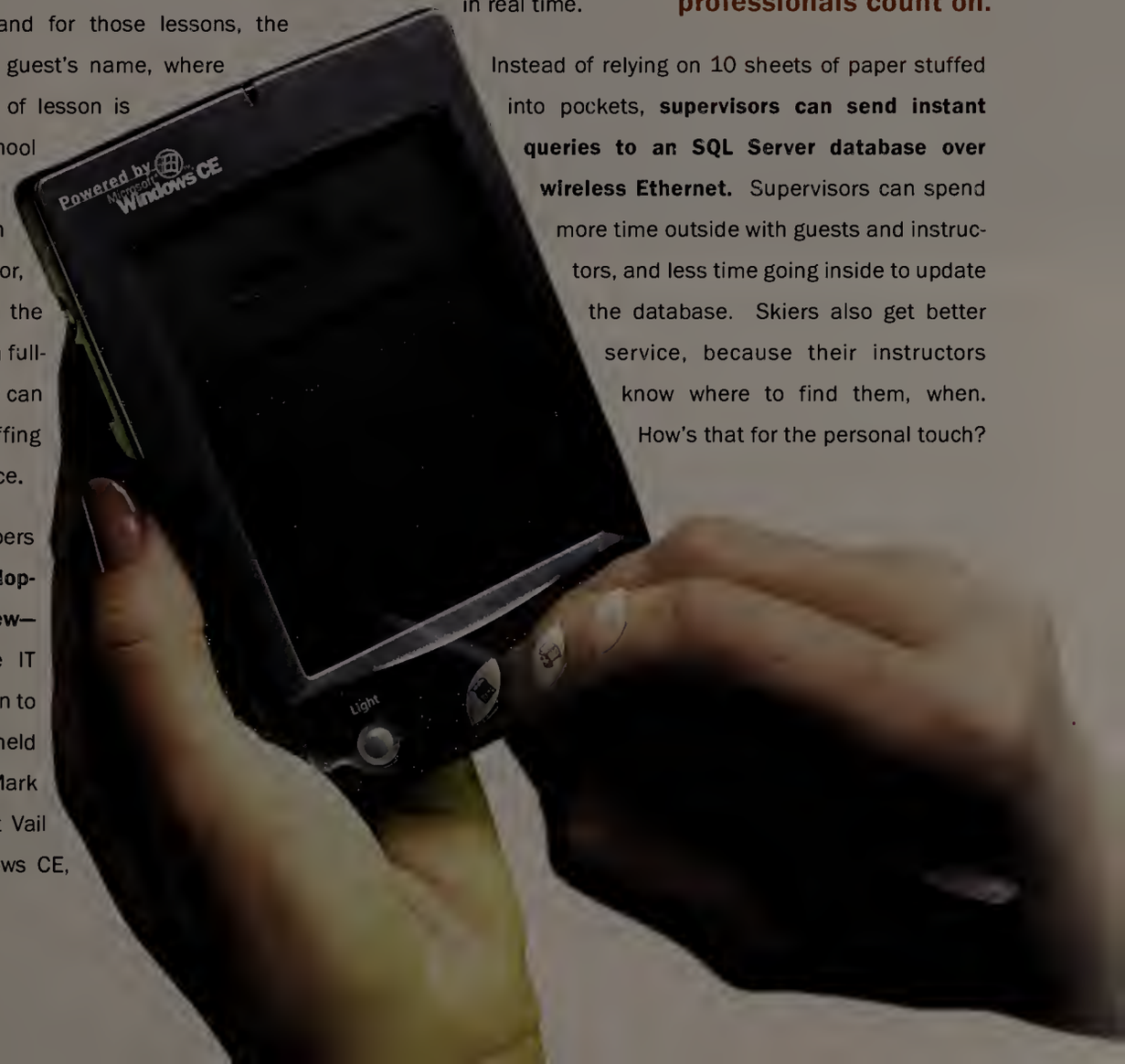
Handhelds on the ski lifts! Yes, it's true: Vail Resorts in Colorado is using Handheld PCs powered by Windows CE to schedule ski school instructors in real time and in real snow. Handheld PCs are small and durable enough to fit in a jacket pocket, and powerful enough to run the Pocket Ski School scheduling application, which uses radio frequency wireless Ethernet to connect to an SQL Server™ database. And because Handheld PCs **run Windows CE, there's no learning curve,** either for the users or the developers.

The users in this case are the ski school instructors, who teach at the largest ski school in North America. Supervisors need to know which of the 1,500 instructors are booked on private lessons, and for those lessons, the instructors need to know the guest's name, where to meet them and what kind of lesson is expected. The Pocket Ski School does all that and more. Now, at a glance, supervisors can know the status of any instructor, whether they went home with the flu or whether they moved from full- to part-time status. Thus, they can make better, more efficient staffing decisions for better skier service.

The H/PCs made the developers happier, too. **Using the development system they already knew—Microsoft Visual C++®**— the IT staff at Vail wrote the application to run SQL queries from the Handheld PC to the host network. Said Mark Roebke, senior programmer at Vail Resorts, "With MFC for Windows CE, we are able to leverage our existing knowledge of writing Windows applications to quickly produce powerful solutions for the Handheld PC. And the common user interface exposed by Windows CE allows us to create applications that are extremely easy to learn and use."

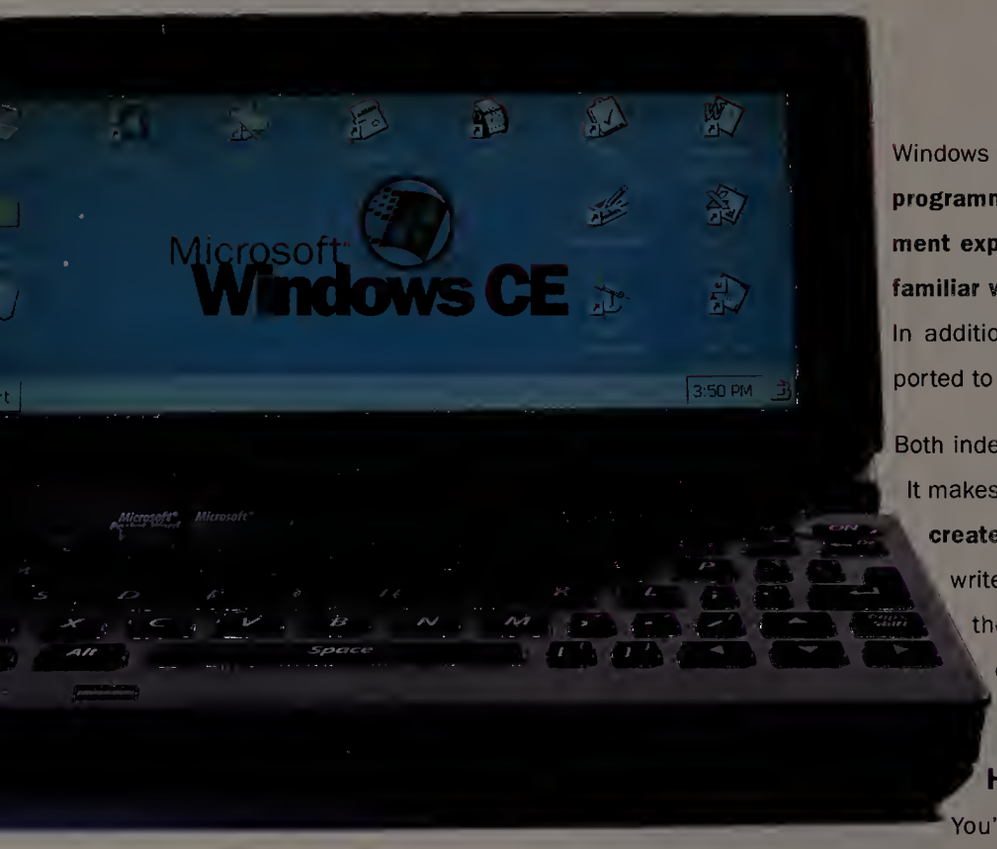
To move most of the processing off the Handheld PC, the developers created a Windows Socket host on the network that does most of the interaction with the SQL Server. As a result, supervisors can update and view the scheduling database, all in real time.

Users like its familiar feel; so do the information professionals who support them. With open standards, extensive connectivity options and hundreds of add-on programs, Windows CE products feature the supportability and extendibility IT professionals count on.



Instead of relying on 10 sheets of paper stuffed into pockets, **supervisors can send instant queries to an SQL Server database over wireless Ethernet.** Supervisors can spend more time outside with guests and instructors, and less time going inside to update the database. Skiers also get better service, because their instructors know where to find them, when. How's that for the personal touch?

Custom applications at hand with Windows CE



PC Companions can quickly turn into an organization's unique tool, as pharmaceutical giant Hoechst Marion Roussel and the Pittsburgh Police Department, have found. These organizations have developed custom applications that run on Windows CE, all utilizing existing Windows-based development expertise.

Organizations like these need unique types of applications and information specific to them. But like all companies, they want information at hand, wherever they go, quickly. And they don't want to spend a lot of time getting up to speed on new systems. That's why Windows CE-based platforms are a good deal for custom development.

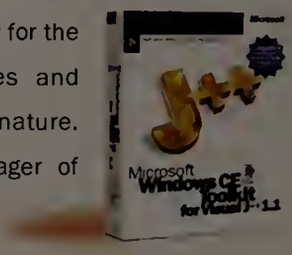
Windows CE **uses the same Microsoft Win32® application programming interface (API), Visual tools and development expertise that developers for Windows are already familiar with.** That means there's no extra learning curve. In addition, code written for desktop PCs can be quickly ported to Windows CE.

Both independent developers and internal IT people agree: It makes sense to **take advantage of existing expertise to create portable applications.** And it makes sense to write for platforms that are well-supported and will be there tomorrow. Which points to Windows CE as the development platform of choice for custom mobile applications.

Hoechst Marion Roussel (HMR)

You're a high-powered sales rep for a global pharmaceutical company. Your customers—busy physicians—give you about two minutes of their time to hear your presentation and sample products. You need to grab their signature in the clinic and then send information and the signature into headquarters. If you work at HMR, you use in-house developed TIM Jr., software—running on a Handheld PC—for managing the distribution of prescription drug samples.

Doctors don't have to wait on HMR reps, because Handheld PCs have the battery life for a full day's work and turn on instantly, ready for the custom software that digitizes and captures the physician's signature. Explains Kevin Greenlee, manager of



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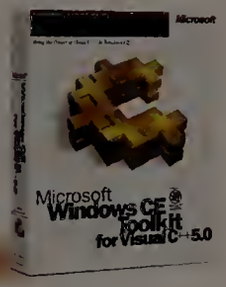


Commercial Information Systems at HMR, "The physicians don't want to wait on us. The H/PC allows reps to **get in and out fast, so they don't lose an opportunity.**"

Then headquarters doesn't have to wait, either, because the call and sample information, as well as the signature, are **instantly synched** with the laptop via a serial cable and proprietary synch software.

Developing TIM Jr. was a cinch, because it was based on a laptop version that was easily ported to the small, lightweight H/PCs. Using TIM Jr. is likewise no problem, because the reps were familiar with the laptop version running on Windows 95.

Because using TIM Jr. on an H/PC can save each rep a minimum of five minutes on each sales call, they can **make more of them, and make the company an extra $5 million a year,** due to increased efficiency and volume. That kind of money can come in pretty handy.

Says Steve Schmitt, CIO for the City of Pittsburgh, "The Handheld PC is able to provide information to police officers where and when they need it. They can pull it right out of their pockets on a street corner and run a plate."

Pittsburgh Police

What's the most dangerous part of being a police officer? Walking into a situation without information. But now the cop walking the beat has **almost instant access** to the city, state and federal crime databases at hand, with a City of Pittsburgh application for Handheld PCs.

• Does a suspect have outstanding warrants? Using a small wireless modem, the Handheld PC can quickly connect via Microsoft BackOffice®-based servers to Pittsburgh's local database to check. In 10 seconds, the police officer knows.

• Is a car stolen? Using the cellular digital packet data (CDPD) infrastructure, with encryption on both ends, the police on the street can securely tap into the Commonwealth of Pennsylvania's vehicle and driver registration databases to find out.

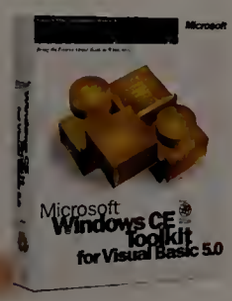
• Is a speeder also a dangerous criminal? The law enforcement agent can find out quickly and easily by **tapping into the FBI's crime computers through a familiar interface.**

Before the advent of the H/PC database application, police called in their plate requests to a dispatcher, who was often backlogged up to 20 minutes. That 20 minutes could spell danger as a police officer approached a car without knowing what he was getting into or could allow the suspect to get away. But now, police practically have the resources of their whole office with them, on the street corner, in less than 10 seconds. And because Handheld PCs turn on instantly, the police can get the information they need to prevent crime, faster.

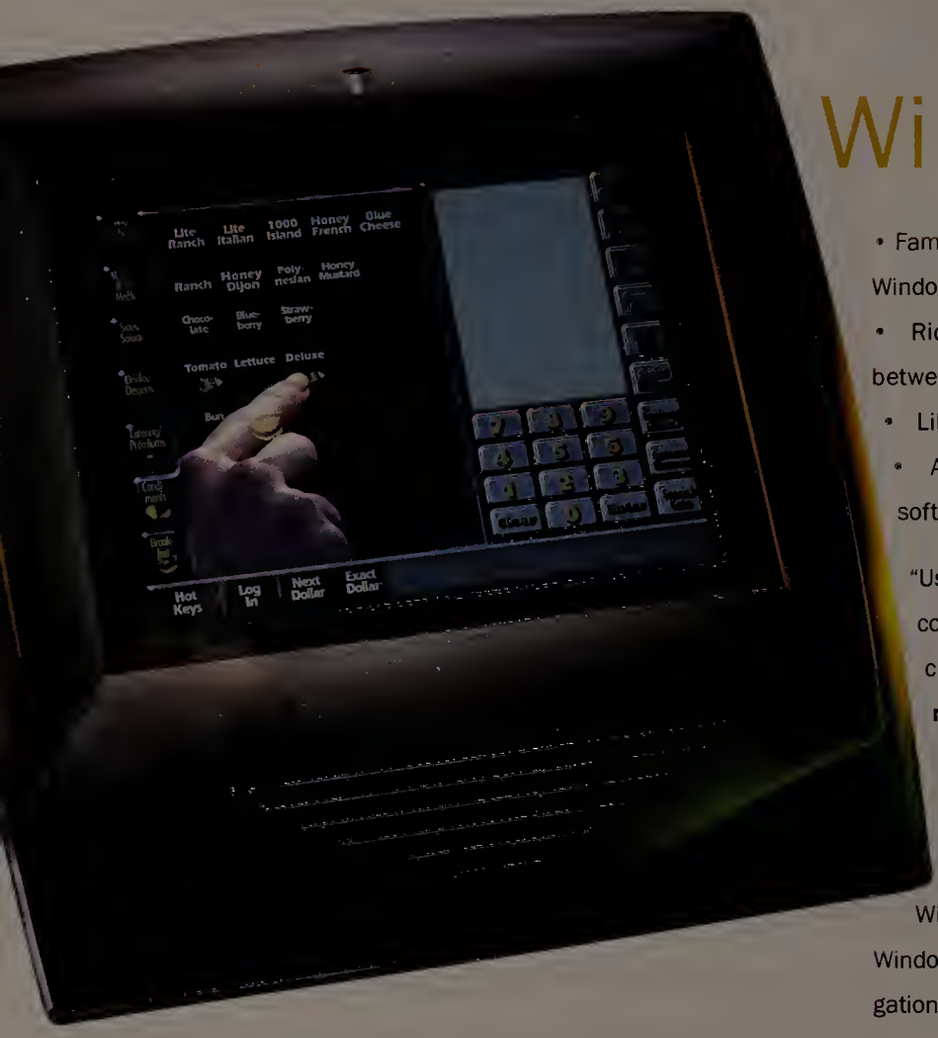
Writing the database application for the Handheld PC was a simple process. The city used existing development environments and knowledge to **quickly port the desktop version to the Handheld PC.**

"We like Windows CE because we can extend the manageability of our Windows 95-based desktops to the wireless environment," says Steve Schmitt, CIO for the City of Pittsburgh, "The Handheld PC is able to provide information to police officers where and when they need it. They can pull it right out of their pockets on a street corner and run a plate."

That means there's no extra learning curve. In addition, code written for desktop PCs can be quickly ported to Windows CE.



To market faster, with embedded systems powered by Windows CE



Specialized devices have long been developed with proprietary operating systems. The drawbacks?

- **Steep learning curves for development tools and operating systems (OS).**
- **Little compatibility or connectivity between devices.**
- **No standard APIs**

Windows CE, on the other hand, is the ideal operating system for embedded systems. It's the most **usable embedded operating system available,** featuring:

- Familiar development tools and environments, including the Windows CE Embedded Toolkit for Visual C++® and Win32® API
- Rich support for connectivity and interoperability between devices, PCs, servers and the Internet
- Libraries of services, such as GUIs and controls
- A modular design that enables componentized software

"Usable" means you can take advantage of knowledge, code, tools and add-ins that already exist, rather than create it all from scratch. This means **faster time to market and lower development costs** for all kinds of specialized systems.

Radiant Systems discovered the Windows CE quick-time-to-market advantages when creating a Windows CE-based retail platform. DATUS found that Windows CE offered lower development costs for its car navigation system. They are just two of many companies designing their embedded systems around Windows CE 2.0, the operating system that can take advantage of tools, code and expertise developers already have.

Radiant Systems

Point-of-sale (POS) systems are a staple in the retail world. And increasingly, retailers are also using interactive kiosks to present in-store information directly to consumers in a compelling manner.

An innovative entry in this category is Radiant Systems' MediaClient-CE, a new Windows CE 2.0-powered retail platform.

www/microsoft.com/windowsce/itsolutions/

Used as a mini-kiosk, the device can be tailored to a wide variety of promotional needs, since it supports a built-in touch-screen and a magnetic stripe reader for swiping credit cards. Its versatility doesn't stop there: As a POS, MediaClient-CE supports a wide range of retail environments through its connectivity to a variety of retail peripherals such as scanners, PIN pads, and cash drawers. With 100BaseT networking, it provides high-speed connectivity to local media servers and the home office.

Store employees and consumers alike find the Windows and multimedia UI provided by the MediaClient-CE completely intuitive. They will also appreciate the quality of video made possible by the kiosk's support of the MPEG standard.

The developers who created MediaClient-CE cited **two key benefits from using Windows CE—openness and compatibility.** Because MediaClient-CE was developed within a familiar development environment, developers had a higher level of confidence in the resulting application. And because MediaClient-CE is based on an established standard from a leading operating system supplier, the developers could be assured their kiosk would be compatible with other Windows-based platforms.

"Windows CE offers a reliable platform based on the same standards as that of a mass-market success like Windows NT® — yet it's customizable to meet the needs of the vertical market," said Jimmy Fortuna, product manager for advanced platforms at Radiant Systems. "This is exactly what our customers need."

In the highly competitive world of retail merchandising, the race is to the swift and creative. Windows CE let Radiant Systems be both.

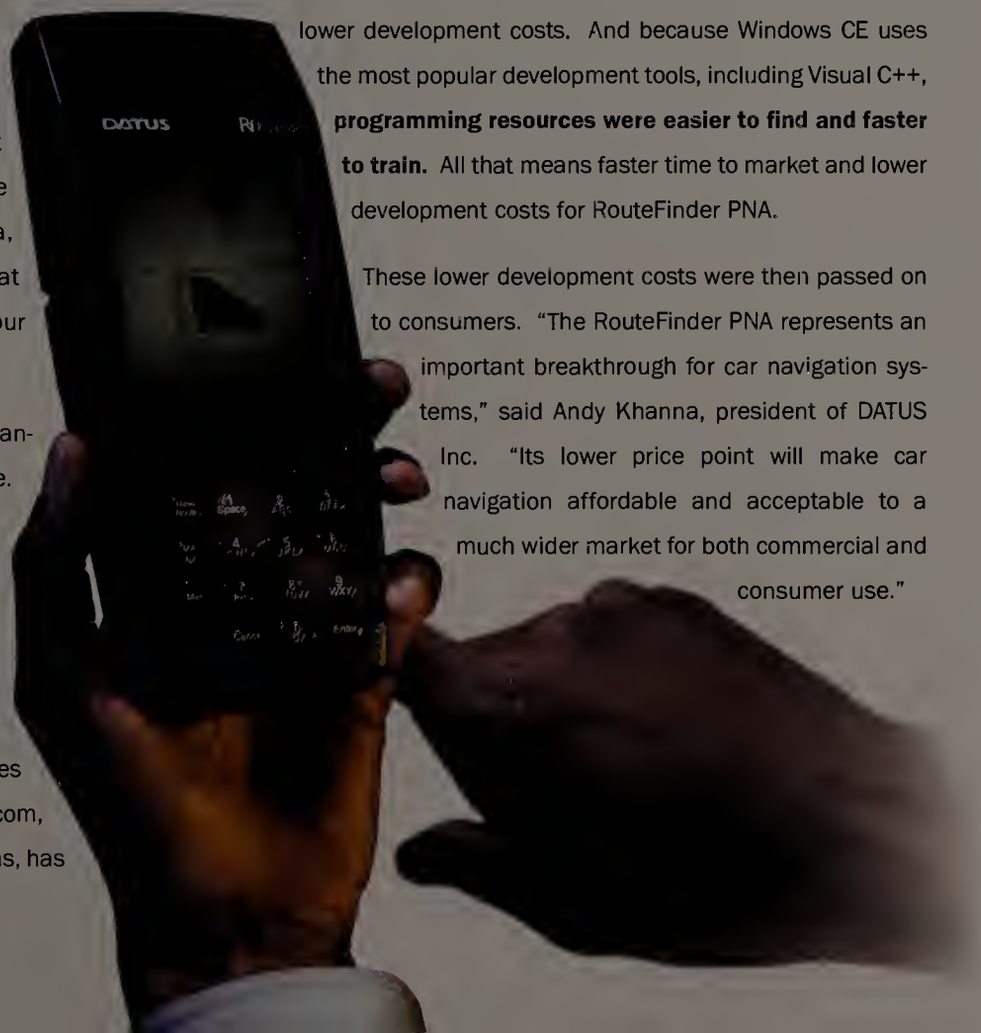
DATUS

Getting lost in an unfamiliar town or city can be one of life's aggravations. That's why car navigation systems are one of the hot new embedded systems helping sell luxury vehicles today. DATUS, a subsidiary of Daewoo Telecom, Ltd. and manufacturer of car navigation systems, has introduced RouteFinder PNA, an all-in-one portable car navigation system powered by Windows CE 2.0, that makes getting lost (or suffering the humiliation of asking directions) a thing of the past.

RouteFinder PNA provides address-to-address route generation and turn-by-turn driving directions. It does this through a global positioning system (GPS) receiver that takes satellite information and pinpoints a person's current location. Then, through text-to-speech voice instructions, RouteFinder PNA directs the driver to the correct route. As the driver approaches each turn, the device speaks the instruction, such as "Turn right on Harbor Lane, drive 0.5 miles."

The RouteFinder PNA development team used the Windows CE Embedded Toolkit for Visual C++ to adapt the Windows CE operating system to their hardware platform. The software developers were then able to build and debug the software for the RouteFinder PNA from inside the familiar Microsoft Visual C++ development environment. What's more, the Windows CE operating system is based on the industry standard Win32 API, making it easy for the developers to reuse their code base across other Windows projects. That means existing services, such as the text-to-speech application, can be leveraged for lower development costs. And because Windows CE uses the most popular development tools, including Visual C++, **programming resources were easier to find and faster to train.** All that means faster time to market and lower development costs for RouteFinder PNA.

These lower development costs were then passed on to consumers. "The RouteFinder PNA represents an important breakthrough for car navigation systems," said Andy Khanna, president of DATUS Inc. "Its lower price point will make car navigation affordable and acceptable to a much wider market for both commercial and consumer use."



Windows CE brings information at hand—

Powered by Microsoft Windows CE

no matter what you're handy at.

Whether you want to use Windows CE out of the box via PC Companions, customize applications for them or embed the operating system into a specialized device, you'll find it an ideal environment. It's as easy to use as Windows, uses familiar development tools and features all the standard connectivity and extendibility people have come to expect from Windows.

For users of H/PCs and Palm PCs powered by Windows CE, they'll find it easy to access their desktop data and stay in touch from anywhere, due to their automatic synch and wireless capabilities and familiar Pocket applications.

For IT departments supporting users of PC Companions, they'll enjoy the fact that they:

- Don't have to retrain users in either using the GUI or the applications,
- Can utilize PC source code,
- Can manage PC Companions just the way they manage desktop PCs, and
- Are using a standard technology supported by a long-term player.

For developers customizing applications for Handheld PCs and Palm PCs, they'll appreciate the quick learning curve and the ability to apply their existing Windows development expertise to applications for Windows CE-based devices.

And for embedded systems programmers, the ability to take advantage of the connectivity, interoperability and existing code and services, as well as a modular OS, will help them get to market with their specialized devices faster and more efficiently.

Where to turn for Windows CE-powered products?

PC Companions powered by Windows CE come in many designs and with customized features. Multiple hardware partners offer Handheld PCs and Palm PCs.

For more information about how to license the Windows CE operating system, or where to purchase PC Companions and Microsoft development tools for Windows CE, please visit: **www.microsoft.com/windowsce/itsolutions/**.

While you're there, check out ordering a free kit that includes additional information about Windows CE-based products and the operating system. Simply fill out an online form, and we'll send it to you.

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www.casio.com/

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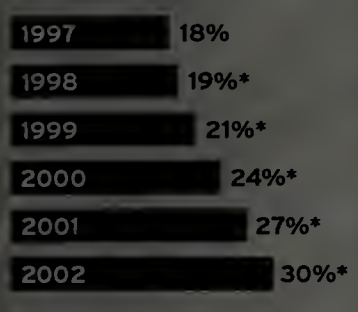
The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

U.S. Internet users who regularly make purchases online



* *Projected*

Base: 1,000 households

Source: The Strategis Group, Inc., Washington

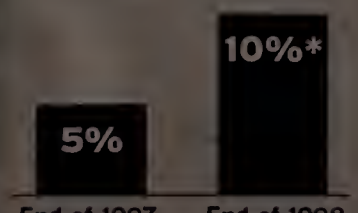
Web searches

There are an estimated 320 million pages on the World Wide Web, and any one search engine is likely to index much less than half of them, according to a report by Steve Lawrence and C. Lee Giles at the NEC Research Institute in Princeton, N.J. People conducting searches are more likely to find what they are looking for if they use more than one search engine, according to Lawrence.

Netscape product

Netscape Communications Corp. has announced shipment of ECXpert 1.1, its electronic commerce software for business-to-business transactions over the Internet. It features improved integration with Oracle Corp.'s business applications and support for secure E-mail with Netscape client software. It also has Lightweight Directory Access Protocol directory integration for extranet partner management. ECXpert 1.1 is available now. It costs $75,000 for a two-CPU system.

North American households that shop and invest online



* *Projected*

Base: 120,000 households

Source: Forrester Research, Inc., Cambridge, Mass.

Feds struggle in race with hackers

▸ *FBI lacks resources to trace most 'net crimes*

By Laura DiDio
ATLANTA

CYBERCRIME IS COSTING American businesses $138 million per year, FBI figures show. But U.S. law enforcement often lacks the resources to pursue hackers, according to top government officials and security experts.

"The FBI can currently pursue one out of 15 cases of computer crime because they lack the funding and the skilled manpower to investigate," said Retired Air Force General Robert T. Marsh. "Waiting for a serious threat to appear is a dangerous strategy."

NATHAN BOLSTER

Retired General Robert Marsh:

The understaffed FBI and Secret Service can't pursue every cybercriminal

Marsh, the former head of the Air Force Systems Command, led the President's Commission on Critical Infrastructure, a 15-month study completed last October to assess the security risks and vulnerabilities that American businesses and government agencies face.

The FBI and the U.S. Secret Service are the primary agencies charged with probing computer crime. The two often work in tandem: The FBI takes the lead role in pursuing hacking and extortion cases, and the Secret Service assumes the lead in banking, fraud and wiretapping cases. But both agencies are simply too undermanned to pursue everyone, Marsh said.

And corporate risk is just one part of the picture. Hackers have successfully invaded government systems 250,000 times in the past three years, said George Tenet, director of the CIA. Tenet and Marsh spoke to corporate executives at the Sam Nunn Policy Forum on Computer Security held here last week at the Georgia Institute of Technology.

The number of attacks, the low level of security in most networks and the growing importance of networks puts government agencies and corporations at enormous risk, Tenet said. "Our enemies are all too aware of our reliance on networks and exploit our security weaknesses, using them against us," he said. He urged corporate .America and federal agencies to allocate more funds for security and to

Feds, hackers, page 42

If you can't beat 'em, cane 'em

Parents should be held responsible when their teen-agers break in to corporate and government networks, and law enforcement officials should mete out stiffer penalties. That was the consensus of 35 users who responded to a recent, informal *Computerworld* online forum on teen hackers and what form of punishment their misguided cyberdeeds merit.

"All computer hackers must realize that what they do is no different than breaking and entering," one respondent said.

The forum respondents agreed that teen hacking needs to be treated as a serious crime and not a childish prank. But the exact nature of their punishment was the focus of debate.

At least one person advocated corporal punishment in the form of caning. Several others said the teens should be educated and required to perform community service — including service at their victim's place of business. Most said the teens should make financial restitution. "If they do something like this at their age and go unpunished, it opens the door to much greater damage later on," another respondent offered. — Laura DiDio

Building brands on Web

▸ *NPR site builder complements on-air presence*

By Sharon Machlis

INTERNET BUSINESS

ONE WAY to succeed on the Internet is somewhat old-fashioned: Know the strength of your company's brand, then figure out how to leverage it.

That's what Tom Lix and his eight-person company aim to do by creating sites for some of National Public Radio's most popular programs, including *Car Talk*, *Whad'Ya Know* and *The Savvy Traveler*.

In an industry in which many news and entertainment sites are still hemorrhaging red ink, Lix said, "we're not making a fortune, but we pay our bills." Revenue is "in the low seven figures," he said.

Lix describes Newmarket Network, sited in a renovated Boston warehouse, as "shoestring venture capitalists."

In return for receiving exclusive World Wide Web licenses for NPR shows, Newmarket develops and maintains the sites, with editorial direction from the shows. His company's return comes from Web advertising and some transaction revenue (T-shirts, mugs and so on).

The key is to offer something that takes advantage of an existing name by giving customers something related, yet extra, he said.

The *Car Talk* site (*www.cartalk.com*), for example, features information about the show and audio from old broadcasts, plus entertainment such as trivia contests and a "virtual dope slap" (an animated postcard you can send to someone who did something stupid).

There is also more useful information such as classified ads and a database of user-recommended mechanics that the radio show hosts couldn't possibly read on air because of time constraints.

"It's relevant but fun at the same time," said Nina Lytton.

Web sites, page 42

Schwab saves with 'net travel planning

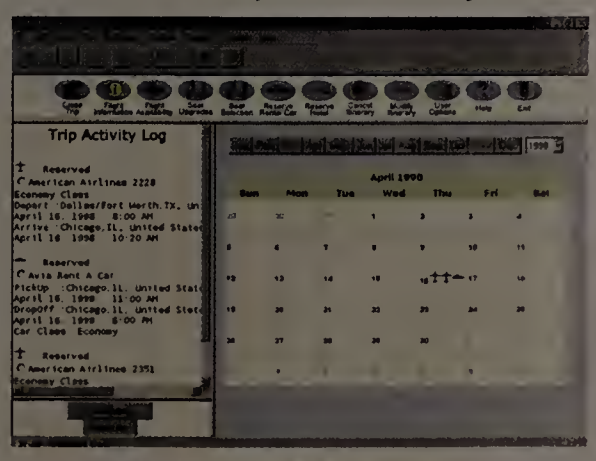
By Carol Sliwa

CHARLES SCHWAB & CO. has been using The Sabre Group's intranet-based Business Travel Solutions for the past 10 months to let employees book travel from their office desktop computers.

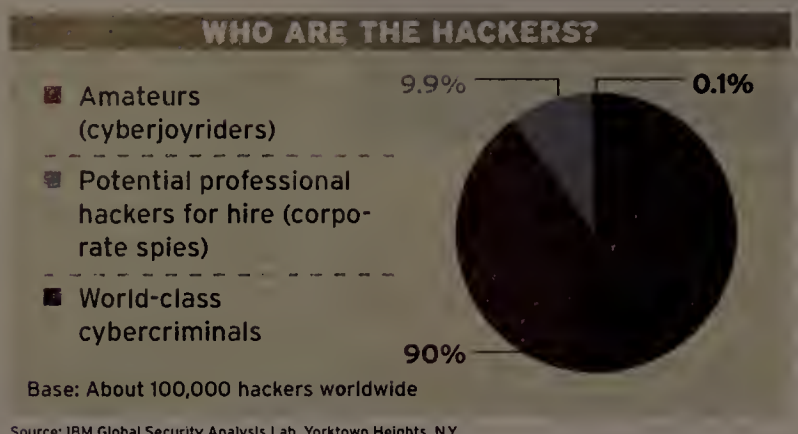
Now Schwab plans to use Sabre's newly released Internet-based Travel Planner to extend another option to employees: booking travel plans and changing reservations when they are on the road or at home.

Making the system even more convenient over the Internet increases the likelihood that employees will use it, said Bob Grant, director of corpo-

Schwab, page 42



Employees can book reservations using a Web browser with Sabre's Travel Planner



Feds, hackers in struggle

CONTINUED FROM PAGE 41

make security an "integral part of every organization's IT strategy."

About 38,000 "white hack" attacks were made on networks at the U.S. Department of Defense to gauge their level of security, said former Sen. Sam Nunn, who organized the conference. The attempts "were successful two out of three times," he said. "What's worse, the [Defense Department's] MIS managers were only able to detect 988 of the 38,000 network break-ins — or just 4%," Nunn said.

NATHAN BOLSTER

Sen. Sam Nunn: **In tests, DOD's systems managers detected only 4% of network break-ins**

If this paints a grim picture, help is on the way. The FBI has hired about 300 agents to track cybercrime. The agency now has seven computer crime squads nationwide and plans to boost the total to 12 next year.

But other problems persist. Most notably, the consistent reluctance of local law enforcement and district attorneys to treat all but the worst teen-age hacking incidents as real crimes, security experts said.

"Trying to get DAs to treat teen hacking incidents as anything but a childish prank is really tough. Oftentimes they treat it as a victimless crime like prostitution. They'll let the hackers plea bargain it down to a simple misdemeanor," said William Spernow, a former government security director who is now senior consultant of corporate security at Fidelity Investments in Boston.

But there are some bright spots, especially in tracking attacks on financial services companies.

Gary Lynch, vice president of information technology security at The Prudential Insurance Company of America in Roseland, N.J., said the Secret Service "pursued all seven cases of hacking and suspected hacking" that he brought to its attention. □

NEW PRODUCTS

INTERLOGUE COMMUNICATIONS CORP. has announced Whirl, a World Wide Web traffic-analysis tool for electronic-commerce sites.

According to the Burlingame, Calif.-based company, the software shows specific paths that individual visitors make as they enter, browse and leave the electronic-commerce site.

Whirl costs $7,495.

Interlogue
(650) 259-9995
www.interlogue.com

HOT JOBS, INC. in New York has announced Softshoe, a private version of the Hot Jobs commercial Internet-based job board. According to the firm, the software lets companies create a custom job board that can be accessed via the Web. Applicants can enter resumes and cover letters. Hiring managers can manage job requisitions and hiring qualifications. Pricing starts at $125,000.

Hot Jobs
(212) 302-0060
www.hotjobs.com

Online travel plan saves Schwab money

CONTINUED FROM PAGE 41

rate travel at the San Francisco-based financial services company.

But Schwab still plans to use the intranet-based system primarily; the company prefers to keep data about travel rules and negotiated rates behind Sabre's firewall, rather than making that information accessible over the public Internet.

Electronic planning and reporting have been important to Schwab since it started booking travel in-house three years ago.

Electronic travel summary reports help the company negotiate better deals with vendors. Electronic ticketing leads to better discounts.

And letting employees do their own booking saves time.

THE BOTTOM LINE

Schwab's travel division has reduced its internal staff from 17 to 11 employees. It reduced telephone inquiries from 350 five-minute calls per day to 224 calls, each averaging three minutes or less. And the $1.6 million that Schwab saved last year went straight to the company's bottom line, Grant said.

The Yankee Group, a Boston-based research firm, predicts that spending on business travel booked over the Internet or corporate intranets will soar from an estimated $236 million last year to $945 million this year, $2.7 billion next year and almost $10.4 billion in 2000.

"The big issue is adoption — getting people to change their habits," said Chris Gwynn, an analyst at Yankee Group.

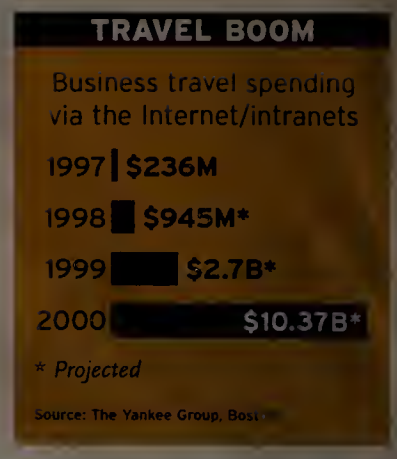
Denise Gow, a Schwab administrative assistant who books travel for her boss, no longer has to call the travel office every time she has to make a choice or change.

"It cuts down on the back-and-forth nature of the process, which ultimately can be aggravating, especially when you're not making the arrangements for yourself," she said.

Unlike consumer-oriented Internet booking through Microsoft Corp.'s Expedia or Sabre's Travelocity sites, corporate online systems permit companies to enforce their travel policies such as preferred airlines or hotels with which they have negotiated rates.

Online corporate offerings include American Express Co. Interactive (AXI), Internet Travel Network's Global Manager and the new package from Sabre, a division of Dallas/Fort Worth, Texas-based AMR Corp., the parent company of American Airlines.

Schwab automates its entire travel management process using Sabre's Business Travel Solutions suite.



HOW IT WORKS

Employees make reservations and order tickets online. They charge expenses using Diners Club cards, which sends them receipts via E-mail, and can download expense information automatically into an electronic expense form. Employees type in items for which they paid cash.

Managers approve expense reports electronically, and the company electronically reimburses both the credit-card company and the employees. Summary reports help managers analyze companywide activity.

A corporate travel auditor hired by Schwab determined that companies in the San Francisco area pay, on average, 32 cents to 34 cents per mile for travel, Grant said.

Before implementing a full electronic management strategy, Schwab paid almost 40 cents per mile, Grant said. Schwab now pays 20 cents to 21 cents per mile, he said. □

Web sites build brands

CONTINUED FROM PAGE 41

president of Open Systems Advisors in Boston, whose consulting firm named *cartalk.com* its Crossroads 98 Web Site of the Year. "[Lix] is very, very knowledgeable about the personality of a brand." The award came after the site repeatedly was named a favorite in interviews with information systems executives, Lytton said.

Lix, 46, was formerly president of Yankelovich Partners, Inc., a traditional marketing consultant firm in Norwalk, Conn. He likens the creation of a Web site to traditional brand extensions. For example, at Yankelovich, Lix worked with a charcoal manufacturer to expand its brand reach by developing a line of charcoal grills. It seems obvious now, but that was a way to generate more revenue by offering existing customers a complementary product, Lix said.

SHARON MACHLIS

Newmarket Network's Tom Lix: **Offering customers a complementary product increases revenue**

Michael Feldman, the host of *Whad'Ya Know* on NPR, says the *notmuch.com* site created by Newmarket has been good for the show. "I think it does help quite a bit in terms of audience loyalty," he said. "It shows signs of having some really good cross-pollination." For example, listeners can enter contests on the Web site.

Lix said he has noticed that not everything about developing new products is the same on the Web as in the physical world.

Most corporations study consumer attitudes for years before committing to a new product or direction. But on the Internet he is doing product release and market research simultaneously, fine-tuning his sites after users send feedback.

"They're very tolerant of you making mistakes, as long as you correct them quickly," Lix said. "The Internet is unlike anything else. The faster we make decisions, the better off we are. . . . That's very anti-Corporate America. People like to plan." □

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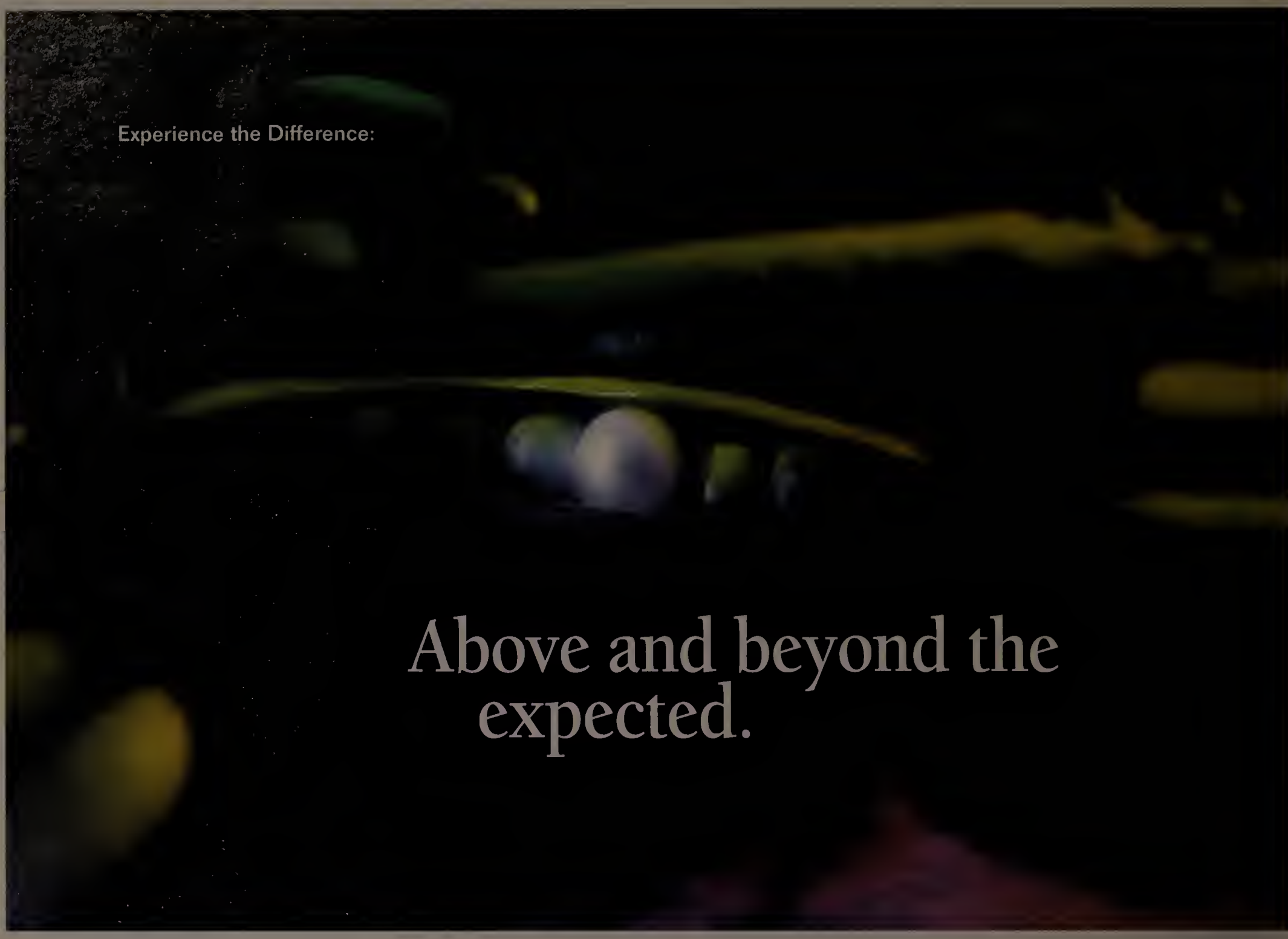

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The Enterprise Network

LANs • WANs • Network Management

Briefs

VIRAL INFECTION

Tracking the growth of known macro viruses

Source: Data Fellows, Inc., San Jose, Calif.

Antispam for Exchange

Information Electronics, Inc. in St. Simons Island, Ga., has developed antispam technology for Microsoft Corp.'s Exchange E-mail system. Remora lets administrators detect and suppress junk E-mail and filter mail from specific users and domains. It also alerts administrators to suspicious activity from any IP address connected to an Exchange server. The product will ship next month. A basic configuration of one Remora server and 100 user licenses will cost $500.

CA, rival BMC integrate

Competing management software vendors BMC Software, Inc. in Houston and Computer Associates International, Inc. in Islandia, N.Y., have integrated their tools. The console of CA's Unicenter suite can now access BMC's Patrol agents that monitor servers, applications, databases and middleware. The link option, Patrolview for Unicenter TNG, should ship next month. Pricing will start at $2,500.

Tracking DMI details

Tangram Enterprise Solutions, Inc. in Cary, N.C., is enhancing its desktop inventory tool to gather information about hardware and software assets stored by PCs that support Version 2.0 of the Desktop Management Interface (DMI). The module for Asset Insight, due this quarter, will collect details from DMI-compliant PCs in a repository.

Luck saves Prudential's strategy

▸ *Tools stand up to change in management plan*

By Patrick Dryden

WHENEVER the good guys pulled off an improbable scheme to save the day in an episode of *The A-Team*, the leader would light a cigar, grin and say, "I love it when a plan comes together."

That's how information systems managers at Prudential Investments feel about the gamble they took trying to get control of distributed systems and applications.

Prudential's Sydney Crisp: **"We . . . realized we needed a more holistic approach"**

They, like most of their peers, tackled individual management problems with individual tools, then wanted to integrate all the tools for more efficiency.

"Even IS organizations that know better tend to plug a hole and move on because they don't have years to develop a management architecture and to get different groups to cooperate," said Sue Aldrich, a consultant at Patricia Seybold Group in Boston.

But instead of lashing the pieces together themselves or adopting a framework, Prudential Investments' IS managers lucked out. The vendor supplying many of their chosen tools, Platinum Technology, Inc., did most of the work for them.

GOING HOLISTIC

"We started with a point product approach, then realized we needed a more holistic approach," said Sydney Crisp, vice president of distributed systems support at Prudential Investments in Newark, N.J.

"When we realized we needed integration, we also realized that the Platinum products had that capability," Crisp said.

The rush to support new client/server applications designed to make 5,500 users more competitive left little time for in-depth analysis of management software, Crisp said.

The main goal was to keep critical business applications on 50 Unix and 400 Windows NT Server systems running, including call center programs that provide customers with information about annuities, mutual funds and retirement services.

Meeting that goal required controlling six different types of databases, tuning servers, planning capacity needs and migrating data among them and

Prudential, page 46

Mobility brings risks

By Kim Girard

COMPANIES THAT embrace flexible work arrangements may be opening the floodgates to security risks. But tighter policies or $100 user-recognition software could be a start toward diminishing those risks, analysts said.

In many cases, companies aren't considering how easy it is to lose gigabytes of critical or sensitive information, alter a hard drive or keep unauthorized people from breaking in to the network through a remote user's line.

TELECOMMUTING

"It's a Pandora's box," said Ron Ploof, an analyst at IceGroup, Inc., a Wakefield, Mass., consulting firm. Many companies are boosting worker productivity by promoting telecommuting, signing out notebook computers to employees to work at home or enabling workers to dial in to the corporate network from the road. But they are failing to ask the hard questions: Should home users be allowed to use their own PC for work? And under what conditions can employees download a gigabyte of data onto a Zip drive and take it out of the office?

Paul Merenbloom, a senior technology analyst at Prudential Securities, Inc. in New York, said setting limits on workers' access can be touchy.

"Very few organizations are willing to put in a Big Brother

Mobility, page 46

TIGHTEN THAT SECURITY

How to stay safe beyond the firewall

- Use longer and less obvious passwords – avoid user names or birth dates.
- Investigate face recognition or fingerprint recognition software. The cost is less than $100 per user.
- Use hardware and software system that generates unique tokens each time a person uses a password. The tokens are unique each time, so even if someone intercepts them, they will be useless.
- Require daily data backup.

Source: Gartner Group, Inc., Stamford, Conn.

Users stay loyal to Cabletron

▸ *But they want more WAN and virtual net products, lower prices*

By Bob Wallace

MANY CABLETRON customers remain loyal to the company despite its management, financial and pricing woes.

But those same users would like to see the vendor expand its wide-area network product lines with more aggressively priced WAN devices. They would also like more branch-office offerings and equipment that enables them to build virtual private networks.

In the past several weeks, the Rochester, N.H., networking provider has seen its latest CEO and other senior officials resign and posted its first-ever quarterly loss. And product prices remain higher than rival networking vendors, putting Cabletron Systems, Inc. at a further disadvantage with its rivals.

But John Burke isn't concerned.

"We have no reason or plan to move away from Cabletron. We're standing pat with our $1 million-plus investment in their equipment," said Burke, global network architect at GenRad, Inc. in Chelmsford, Mass.

RICHARD ROBINSON

The University of Maryland Medical Center's Tom Landis says he isn't worried about Cabletron's problems

"These types of problems have become somewhat normal in this industry," he added, referring to past troubles at Bay Networks, Inc.

For Tom Landis, chief network officer at the University of Maryland Medical Center in Baltimore, Cabletron's struggles aren't "a huge deal."

"They're providing us everything we need and are helping make [our] project [on

Cabletron, page 46

Luck helps Prudential strategy

CONTINUED FROM PAGE 45

the mainframe, said John Lim, director of database services.

Several Platinum tools met the IS group's best-of-breed criteria. That situation also helped avoid "having to deal with half a dozen different vendors," Lim said.

But early in the implementation phase, IS managers found that they should coordinate tasks.

Systems and database administrators, developers and the help desk needed to share information to speed troubleshooting, Crisp said.

"We were fortunate that Platinum had some communication capability in place," he said. "Now we can take advantage of their integration."

For example, operators receive alerts from both the server and database monitors, so they can quickly understand complex capacity problems, Lim said. They have been able to stabilize a server that kept crashing and to reduce access time by half for a vital database, he said.

New versions of the tools can link functions directly, correlate events and integrate with TME 10 enterprise from Tivoli Systems, Inc.

Upgrading promises even more efficiency, Lim said, plus the ability to send alerts up to TME 10. Parent Prudential Insurance Company of America will use TME 10 to unify its enterprise management view.

"I wouldn't say we feel fortunate that the tools we selected will work together," said Marian Lucia, chief information officer at Prudential Investments. "Platinum delivered what I expected."

Like most IS organizations, this one "made the best decisions along the way," Aldrich said, "but they lucked out twice."

Platinum acquired popular products that could stand on their own, then integrated them," she said. And the parent company's move to TME 10 didn't make the investment group's efforts obsolete. □

Mobility brings risks

CONTINUED FROM PAGE 45

machine to watch and regulate," he said. "Are you going to log everything that goes in and out of a network?"

Prudential users can't access the Internet through the company from outside the office, he said. At home, they use a separate Internet provider to prevent back-door access to the network. Remote users can't access selective information stored on the corporate intranet, and network gateways limit the size of files moved across the network. The company also uses digital certificates and passwords that generate unique tokens each time the user logs in. So even if someone intercepts the tokens, they will be useless to him.

Many other companies aren't so cautious.

"Every time [security] comes up with a client, I ask, 'What can employees walk out of this building with unchallenged?' " said Gil Gordon, a Monmouth Junction, N.J.-based telecommuting analyst. "One guy said, 'I could walk out of here with a computer, and the guy would hold the door for me.' "

On the network end, Gordon recommends a user password (one more complex than a name or birth date), a secure ID, a peripheral — for example, fingerprint, retina or face recognition software to identify the user — and a policy that holds telecommuters to the same security procedures used inside the building.

John Girard, an analyst at Gartner Group, Inc., said the price of hand and face recognition software is less than $100 per user. "A lot of this stuff we think is rocket science" is commonly available, he said.

By 2003, a third of the U.S. workforce is expected to work remotely in some capacity, and companies can no longer afford to leave their data unsecured, Girard said. "The trick is getting companies scared enough to do it," he said. □

Snapshot

The top five Windows NT Server third-party applications:

- **Octopus,** Octopus Technologies, Inc., Yardley, Pa., fault tolerance
- **Quota Manager,** New Technology Partners, Inc., Manchester, N.H., disk space management
- **Remotely Possible/32,** Avalan Technology Corp., Holliston, Mass., remote access
- **Trusted Enterprise Manager,** Master Design and Development Corp., San Ramon, Calif., security and user account management
- **ABC LAN Licenser 3,** ABC Systems, Burlington, [illegible]s., software metering

Base: 500 Windows NT users

Source: Sunbelt Software, Inc., Clearwater, Fla.

Cabletron users loyal

CONTINUED FROM PAGE 45

smoothly," Landis said.

The medical center has invested roughly $5 million in Cabletron switching equipment and software to support a picture archiving and communications system that was designed to speed patient diagnosis. It will go live in June.

"We're sticking with them," said James Wiedel, network manager at the University of Southern California (USC) in Los Angeles. "They've got solid products with top-rate technology and are building on that through the acquisition of [switch/router vendor] Yago Systems this past January."

Wiedel and others would like to see Cabletron not only develop new WAN products, but also reduce prices on existing ones.

"We need to get more aggressive with WAN product pricing and marketing," acknowledged Michael Leland, director of telecommunications product marketing at Cabletron.

"We're standing pat with our $1 million-plus investment in [Cabletron's] equipment."
– John Burke, GenRad

The company is studying its pricing levels now.

USC, for example, wants a 45M bit/sec. T3 interface that would enable it to use its Cabletron 9000 data center switches to support a microwave link between two campuses. Cabletron plans such a product for delivery in the third or fourth quarter.

"I'd like to see them get into the virtual private network [products] market," said Jim Hutchinson, network manager at Children's Hospital in Boston.

The hospital is a former Cabletron account that switched to Digital Equipment Corp. but reunited with Cabletron when the vendor bought Digital's networking unit last fall.

Hutchinson also wants Cabletron to offer a greater selection of branch-office networking equipment.

Leland said Cabletron will join the virtual private network device fray in the coming months and will expand its branch-office product portfolio. But he declined to give details. □

NEW PRODUCTS

XCELLENET, INC. has announced RemoteWare Managed Client, a suite of systems management software designed for remote computers.

According to the Atlanta company, the suite includes Software Manager, which automatically delivers files, applications and updates to remote users during communications sessions; and Inventory Manager, which automatically scans and retrieves detailed information on hardware and software resident on remote systems.

The AntiVirus Manager and Backup Manager components let managers centrally control virus scans and backups on remote systems.

The suite costs $375 per Windows client.

XcelleNet
(770) 804-8100
www.xcellenet.com

3COM CORP. has announced the Fast EtherLink Server NIC, the Gigabit EtherLink Server NIC and the Token Ring-in-Fast Ethernet NIC, three new server network interface cards (NIC).

According to the Santa Clara, Calif., company, the Fast Ethernet card features self-healing drivers that monitor network server links and correct faltering connections.

The Gigabit Ethernet card helps reduce server bottlenecks and guarantees compatibility with the final IEEE 802.3Z Gigabit Ethernet specification.

The Token Ring-in-Fast Ethernet card can be used to connect Token Ring client PCs to Ethernet topologies.

The Fast EtherLink Server NIC costs $199, the Gigabit EtherLink Server NIC costs $1,695, and the Token Ring-in-Fast Ethernet Server NIC costs $249.

3Com
(408) 764-5000
www.3com.com

INTERGRAPH CORP. has announced WebScale, TCP/IP clustering software for the company's InterServe World Wide Web servers.

According to the Huntsville, Ala., company, the clustering software can combine two to eight InterServe Web servers to handle high-volume network traffic. It includes support for automatic load balancing of individual TCP/IP services across the cluster and for fail-over protection.

WebScale also features a central console for viewing cluster configurations and traffic light reporting of node status.

Two runtime licenses cost $1,995. Additional licenses for up to eight nodes cost $995 each.

Intergraph
(205) 730-2000
www.intergraph.com

Software

Databases • Development • Operating Systems

Briefs

Cable TV gets Java

Scientific-Atlanta, Inc. has licensed Sun Microsystems, Inc.'s Personal Java application environment for the Explorer 2000 television set-top box, the two companies announced last week. PowerTV, Inc., which makes the PowerTV operating system that runs the set-top box, will port Personal Java to its operating system. The Explorer 2000 set-top box will offer a variety of features including Internet access, E-mail and the ability to run Personal Java applications, the companies said.

Platinum adds rules

Platinum Technology, Inc. in Oakbrook Terrace, Ill., is releasing a version of its application development environment designed to turn business rules into easy-to-use components. Platinum Aion 8.0, a rapid application development environment, handles business rules as components that can be dropped into applications and reused in others.

Need to move data?

Praxis International, Inc., a Waltham, Mass.-based manufacturer of data movement tools, has announced a service program that gives customers an assessment of their business needs for sharing information among databases. The service examines data requirements for key business applications at customer sites and provides a suggested road map for linking different systems, Praxis said. Pricing starts at $20,000.

YOU WAIT, YOU PAY

Cost per line to fix year 2000 code

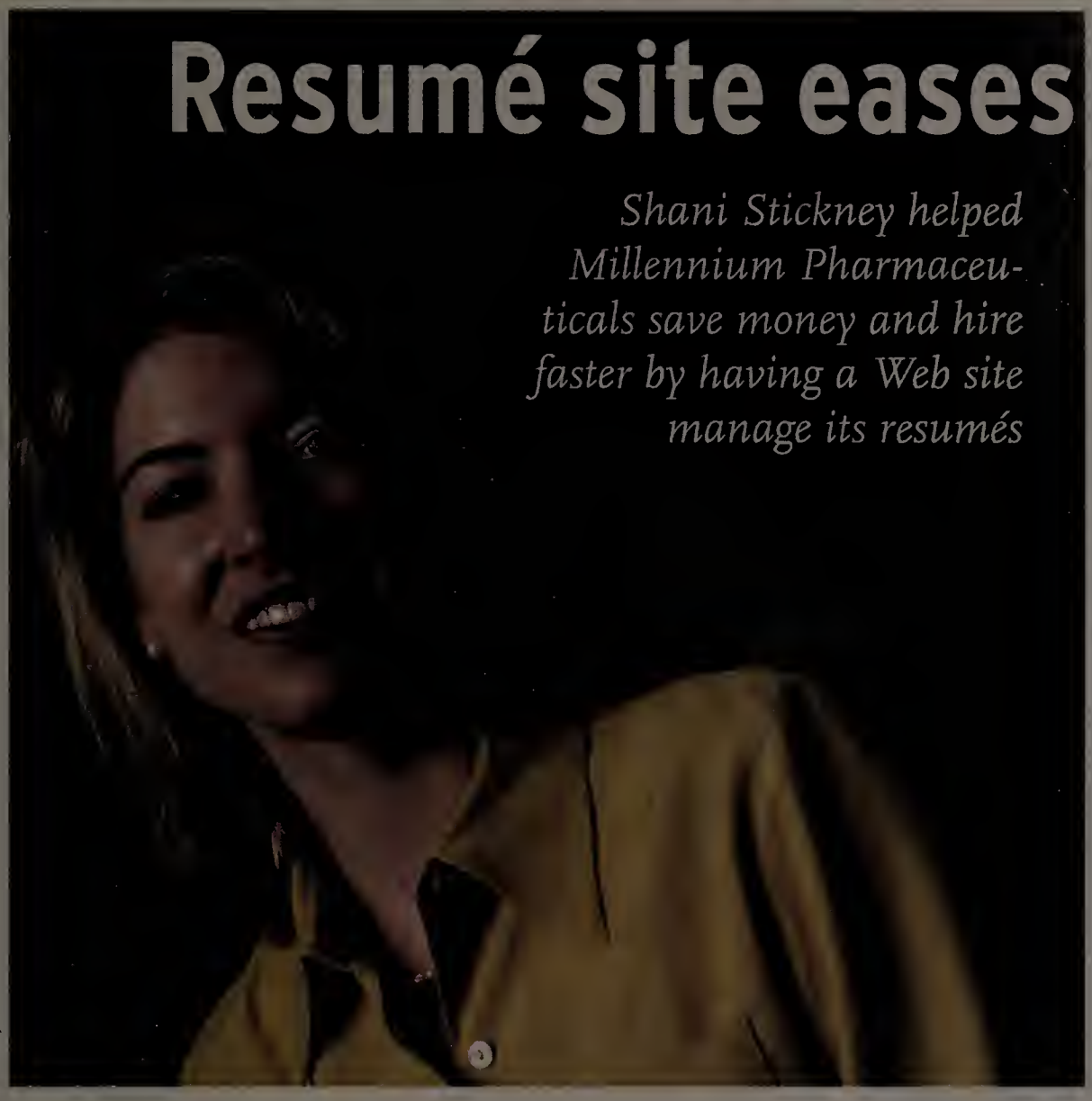
1997	$2.00
1999	$4.10*

*Projected

Sources: Gartner Group, Inc., Stamford, Conn., Price Waterhouse LLP, New York

Resumé site eases hiring

Shani Stickney helped Millennium Pharmaceuticals save money and hire faster by having a Web site manage its resumés



STELLA JOHNSON

By Tim Ouellette

MILLENNIUM Pharmaceuticals, Inc. is growing fast — too fast for its old paper-based resume tracking system to keep up with potential job candidates.

So Shani Stickney, Millennium's manager of staffing and human resources systems, has outsourced resume management to a World Wide Web-based service.

Like many other fast-growing midsize companies, Millennium didn't have the time or budget to buy, install and maintain a resume tracking system, which could cost up to $100,000. So the Cambridge, Mass.-based company is tapping the Internet to off-load that work and free up recruiters.

For example, Stickney said she expects to add 400 employees to Millennium's current staff of 550 this year. So far, she has hired about 50 workers

Resume site, page 50

Automation could help card maker compete

▸ Outsourcing, ERP help No. 3 shoot for No. 1

By Thomas Hoffman

GIBSON GREETINGS, INC. in Cincinnati has announced a two-pronged corporate restructuring plan: outsource manufacturing chores and invest $30 million to $35 million in an enterprise resource planning (ERP) system.

The goal is to help the No. 3 maker of greeting cards and gift wrap become more cost competitive against bigger rivals Hallmark Cards, Inc. and American Greetings Corp.

CORPORATE RESTRUCTURING

COST CUTTER

A Gibson spokesman said the restructuring is expected to save $5 million to $7 million next year and $10 million per year thereafter. He said the company expects to select an ERP system in the next few months.

The moves should help Gibson increase "speed and responsiveness" to the market, said Frank J. O'Connell, the company's chairman, president and CEO, in a statement.

Gibson historically hasn't used information technology innovatively, but the ERP system could help it gain some ground, said Jeffrey S. Stein, managing director at McDonald & Co. Investments, a Cleveland-based investment bank.

Gibson's information systems team won't be affected by the outsourcing and will continue to manage the company's manufacturing-related information systems, the Gibson spokesman said. □

Tracking your trades

▸ Rand's Web-linked data warehouse will ease customer access

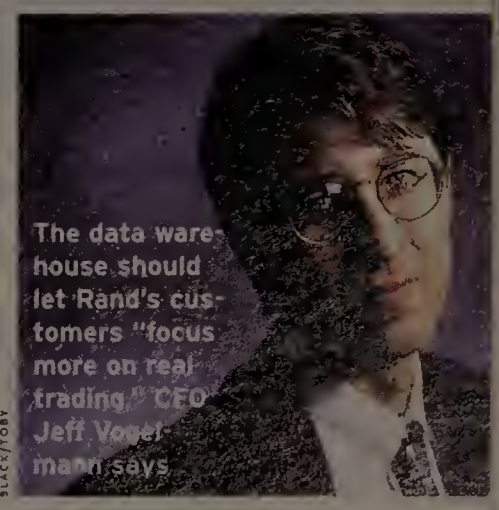
By Craig Stedman

COMMODITY TRADERS who use Rand Financial Services, Inc. to process their buy-and-sell contracts may be good at predicting the future. But it hasn't been easy for them to keep track of the present.

Like other companies that clear trades of commodities futures, Chicago-based Rand Financial gives its customers only day's-end statements detailing their trades, holdings and potential profits or losses.

A dozen or so large institutional traders can get the information electronically by downloading flat-file extracts from Rand Financial's AS/400-based clearing system.

But most of the company's 4,000 customers have to be



The data warehouse should let Rand's customers "focus more on real trading," CEO Jeff Vogelmann says

BLACK/TOBY

content with a printout faxed "sometime in the middle of the night," said Chief Financial Officer Jeff Vogelmann.

Rand Financial, one of the top clearinghouses for the big Chicago commodity exchanges now plans to use a data warehouse linked to the World Wide Web to let customers get hourly updates on their trading positions. The company hopes the new system will help distin-

Tracking, page 50

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Resume site eases hiring

CONTINUED FROM PAGE 47

with the help of the outsourcing plan. The positions are mainly for geneticists, molecular biologists and information technology workers, she said.

Because Millennium's IT department is bogged down with a major client/server rollout, the IT manager and Stickney agreed that outsourcing resume management seemed the best course of action.

HOW IT'S DONE

The Internet service, called WebHire (*www.webhire.com*), creates a private pool of Millennium's existing and incoming resumes for recruiters to search and download for specific jobs. WebHire is run by Lexington, Mass.-based ResTrac, Inc., a resume software systems maker. Pricing for annual WebHire subscriptions starts at $10,000.

All of Millennium's job postings now instruct candidates to either E-mail, fax or mail their resumes to the WebHire service directly, Stickney said.

"We were having a big problem reusing resumes before," Stickney said. "Now we actually have a chance to keep resumes on file. And we slashed the cost per hire because we can reduce advertising expenses by efficiently reusing resumes."

Another service, called Networker (*www.alexus.com*), takes the idea one step further by letting subscribing companies buy and sell all the service's resumes in a sort of online commodities market (see related story at right).

> **"We slashed the cost per hire because we can reduce advertising expenses by efficiently reusing resumes."**
> **– Shani Stickney, Millennium**

"Outsourcing this process helps because your costs are going up to hire people [due to the skills shortage]," said Dave Hofferberth, an analyst at Aberdeen Group, Inc. in Boston. Web-based services can be a good deal compared with installing a system internally, he said.

"It gives us a chance to play with the big boys," said WebHire subscriber Joseph LeBlanc, human resources director at Dynamics Research Corp. in Andover, Mass. "We got their system for the equivalent of two agency fees."

The one setback with a Web-based system, though, is slow access, Stickney said. That happens especially in late morning and afternoon as West Coast companies log on to the Internet.

To address the issue, ResTrac this year plans to improve WebHire's ability to perform overnight searches for recruiters. The goal is to take advantage of faster connection speeds and let human resources staffers perform recruiting work first thing in the morning, without having to log on during busy times. □

Resume trading market

Alexus International last week unveiled a Web-based commodities exchange for one of the hottest products in demand these days: quality resumes.

The Networker service from the Gaithersburg, Md.-based company (*www.alexus.com*) gives subscribers a way to trade any unused resumes generated from a typical job listing. Observers said only five out of 100 resumes usually match a typical job posting, so there is a lot of paper left over for companies to organize, store and track later.

"You always end up sharing resumes anyway with other companies. This makes it a more formal system and a lot more easily accessible," said Sandy D'Alene, human resources director at Sodexho USA in Waltham, Mass., which subscribes to Networker.

Other subscribers include Sears, Roebuck and Co., Steelcase, Inc. and Marriott International, Inc.

Here's how Networker works: Subscriber companies earn credits for submitting their extra resumes to the Networker database. They can use those credits to buy other resumes. Candidates are contacted before their resumes are offered to other subscribers, however.

Recruiters also can link to the Networker site and buy resumes with cash, too. For example, a typical resume can cost $25. Networker subscriptions cost $1,500 for a onetime set-up fee, $75 per recruiter/user and $1 per resume processed. — Tim Ouellette

NEW PRODUCTS

SOFTSCAPE, INC. has announced QuickFind 98, a software utility that enables file access and doesn't require the application that created the file.

According to the Wayland, Mass., company, the utility supports more than 225 file types, including those created in Microsoft Corp.'s Office 97, Lotus Development Corp.'s SmartSuite 97 and Adobe Systems, Inc.'s Acrobat. Users can search, view, convert, copy and print any file supported by the utility. QuickFind 98 was designed to ease user migration to Windows 95 or NT by allowing free exchange of 16- and 32-bit files, Macintosh files and legacy data.

It costs $49 for the standalone version and $99 for the multiuser professional version.

Softscape
(508) 358-1072
www.softscape.com

RELATIVITY TECHNOLOGIES, INC. has announced RescueWare, Windows software for converting legacy Cobol applications into languages such as Java, C++ and Visual Basic.

According to the Research Triangle Park, N.C., company, the graphical application converts legacy applications for use on corporate intranets and through the year 2000. It inventories and analyzes legacy systems for business rule extractions, screen-event mining, data modeling and code partitioning. It then changes the systems into object-based components and generates modern user interfaces, program code and database definitions.

It costs $15,000 per workstation, plus a charge per line of code converted.

Relativity Technologies
(919) 484-9390
www.relativity.com

MIGRATEC, INC. has announced MigraTEC2000, a year 2000 software tool for analysis and remediation of client/server applications written in C and C++.

According to the Farmers Branch, Texas, company, the tool uses compiler parsing techniques to deconstruct code, detect problem dates and minimize false positives. Once an application has been analyzed, users select and apply remediation options such as date expansion, windowing or sliding window. The tool implements predefined code as per the remediation instructions and increases standardization.

The tool costs $5,000 per workstation, plus a usage fee per line of code.

MigraTEC
(972) 969-0300
www.migratec.com

STERLING SOFTWARE, INC. has announced SAMS:Vantage for Distributed Platforms Release 4.2, software for storage management.

According to the Rancho Cordova, Calif., company, the software can report on, monitor and manage storage systems across Windows NT, NetWare, Unix, OS/2 and MVS platforms from one console. The release lets users collect and store historical data without having to export the data to another application.

Pricing starts at $25,000 for an average system.

Sterling Software
(916) 463-8500
www.storage.sterling.com

Tracking your trades

CONTINUED FROM PAGE 47

guish it in what has become a cutthroat, low-margin business.

"There's not much to differentiate between the services of the clearinghouses right now," Vogelmann said. And the fee customers pay for clearing a trade has shrunk from nearly $100 to just $10 to $15, leaving little room to maneuver on price, he said.

GETTING IN THE GAME

The commodities industry as a whole has been slow to automate, said Mike Crouch, a Rand Financial customer and a member of the technology committee at the Chicago Mercantile Exchange. Making and tracking trades "is still basically a batch-mode process that's highly manually intensive," he said.

For example, Crouch's trading firm has 50 traders and an equal number of clerks who update the company's trading records as each transaction occurs.

The large trading volumes involved will still require real-time manual updating even after Rand Financial's new application is in place, said Crouch, co-owner and treasurer at Chicago-based Kottke Associates, Inc.

But the data warehouse should reduce the hassle of checking trades cleared by Rand Financial against the written trading cards used in the pits, Crouch said.

Traders now have to wait for a printout from Rand to arrive, and an error check "often doesn't get done until the next day," he said.

The data warehousing system will take flat-file feeds from Rand Financial's AS/400 and store them in a Microsoft Corp. SQL Server database running on Windows NT, said Vogelmann, who has taken the lead role in coordinating the project [CW, April 6].

Customers will be able to read trading reports from standard browsers, Vogelmann said. The system, which is due for initial use by late May, is being developed by consultants from Platinum Technology, Inc., using the Oakbrook Terrace, Ill., vendor's data extraction and report writing tools.

ADDITIONAL BENEFIT

Rand Financial also plans to use the data warehouse to give its executives browser-based access to internal risk management reports that track whether customers are in danger of overextending themselves with trades.

"I travel quite a lot, and the idea that I can look up anything I want to at any time is amazing," said Jeff Quinto, Rand's president.

The reports are faxed to Quinto now, "but that's just a snapshot in time," he said. "This will almost be in real time." □

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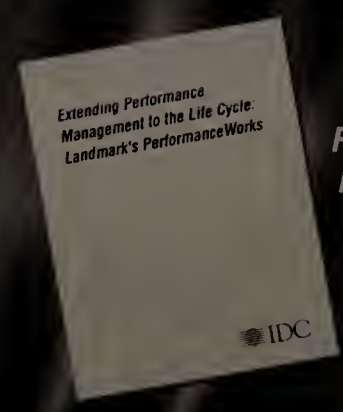

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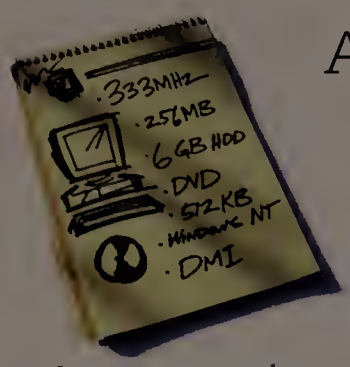

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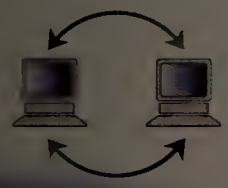

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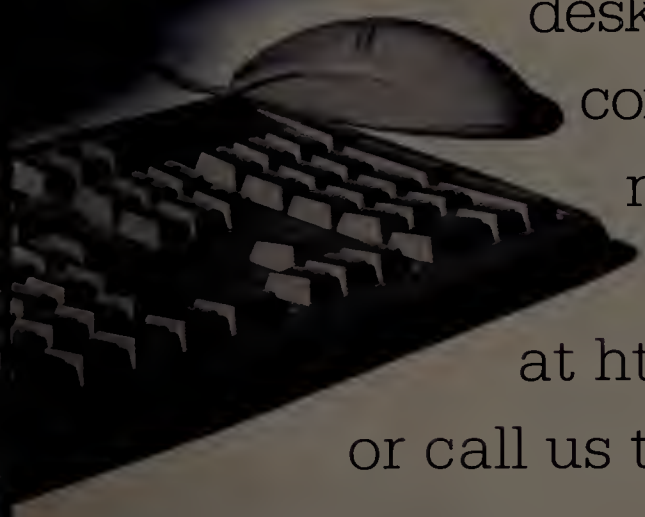

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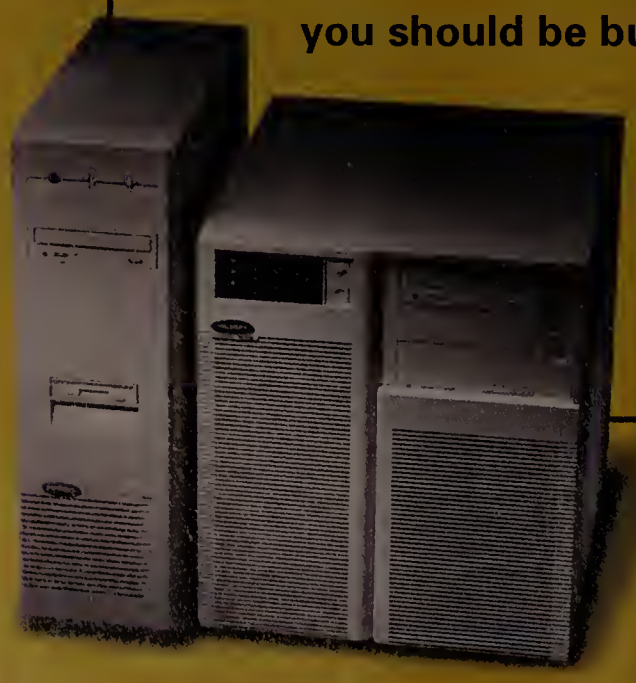

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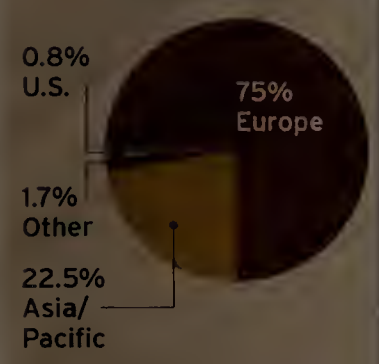
Briefs

NOT SO SMART

Where smart cards were used last year



Base: 1.2 billion cards
Source: Datamonitor, London

Dell has Fibre Channel

Dell Computer Corp. and Westboro, Mass.-based Data General Corp. last week announced a pact under which Round Rock, Texas-based Dell will sell DG's Clariion Fibre Channel RAID storage products.

As part of the agreement, the two companies will work on developing and delivering new Fibre Channel storage products. Dell expects to start selling the Fibre Channel storage products later this year.

HP cuts Unix prices

Hewlett-Packard Co. in Palo Alto, Calif., recently slashed prices across its Unix workstation family by up to 37%, citing greater operational efficiencies and lower memory and storage prices.

The deepest cuts were on the dual-processor HP Visualize Model J2240 system, which was reduced from $55,900 to $35,480. Model 3240, previously priced at $63,200, was reduced to $47,600.

Mainframe security

CyberSafe Corp. in Seattle released Single Sign-On, which secures MVS mainframe applications. SSO/MVS uses technologies such as public-key encryption and Kerberos. The server license lists for $10,000.

SSO/MVS also requires a $1,999 TicketAgent Proxy and the TrustBroker Client, which costs $95 per user.

IT overhaul may boost fashion profit

▸ *Liz Claiborne swaps old systems for new in bid to get more flexible*

By Jaikumar Vijayan

MIDWAY THROUGH the most wrenching information technology overhaul in Liz Claiborne, Inc.'s history, John Sullivan, the company's vice president of information systems, had a rather startling insight.

"The biggest challenge in attempting something like this has got almost nothing to do with technology issues," Sullivan said. Instead, he discovered it is about lining up technology changes with business needs while teaching people how to cope with change.

For the past 18 months, Sullivan has been leading an information technology overhaul that is being driven by a sweeping reorganization at the New York-based apparel maker.

The objectives of the reorganization: double revenue to more than $4 billion by the year 2000, cut down operations costs, improve communications with suppliers and customers and make systems compliant with year 2000 date changes. When the reorganization is complete in mid-1999, Liz Claiborne will have replaced more than 80% of its old computer infrastructure.

Almost all of the company's old IBM AS/400 systems have already been replaced by Hewlett-Packard Co. Unix and Windows NT servers. The company is tossing out 20 years' worth of homegrown applications and bringing in specialized packaged applications to run on Oracle Corp. databases.

One of those applications is a decision-support warehouse the retailer plans to roll out companywide later this year. Tying it all together will be a new infrastructure based on Internet technologies.

The technology change already is impacting some business processes. For example, the firm is moving from using pen-based sketches or depending on external organizations for designs to using sophisticated computer-aided design and product specification tools to help in the design process.

Claiborne, page 56

Call center puts NCs in driver's seat

By April Jacobs

NINETY-SIX PERCENT is pretty good, but it isn't perfect. Roberts Express, Inc., a same-day shipping company, is looking at network computers and a new Java-based graphical user interface (GUI) to see if it can get the job done on time more often.

The pilot test at Roberts Express, in Akron, Ohio, pits a group of customer service representatives using IBM Network Stations against others using PCs and the company's homegrown, text-based front end, said information systems manager Joe Greulich.

Shipping company Roberts Express is testing Network Stations and Java-based GUIs to see if call center performance improves

IMPROVED CUSTOMER SERVICE?

Greulich said the company, a $200 million subsidiary of Federal Express Corp. parent FDX Corp. in Memphis, wants to see if the expected faster performance and improved ease of use of the GUI front end and thin clients will make customer service staffers more efficient as they log pick-ups and deliveries and track packages through the company's system. Roberts Express promises same-day delivery within a 15-minute drop-off window.

Driver's seat, page 56

EMC megadrives fit company just right

PRG's Tim Hill says subsystems with the 47G-byte drives, which are based on the old design, aren't for everyone because they are slower

MARK ESCHER

By Nancy Dillon

WHEN IT COMES to buying disk storage, Tim Hill is interested in two things: price per megabyte and how to maximize his direct-access disk pool.

Hill manages 30T bytes of data on both disk and tape as vice president of technical services at Atlanta-based Profit Recovery Group International (PRG). He is ordering 64 of EMC Corp.'s recently announced 47G-byte drives for his EMC 5700 array.

But, Hill said, a subsystem built with 47G-byte drives may not be for everyone. The new drives are based on the aging 5.25-in. design, so they are slower and more prone to failure than the sleeker 3.5-in. 9G- and 18G-byte drives used in most subsystems. In a transaction-intensive environment, the slower performance of the drives — which rotate at 5,400 rpm, as opposed to 7,200 rpm for the 3.5-in. drives — may be too slow.

"Our environment doesn't have your typical transaction processing," Hill said. PRG's retail customers give him data that he processes in large data sets on an IBM mainframe. His auditors in the field then access the data online via file transfer

EMC megadrives, page 56

Claiborne overhauls IT

CONTINUED FROM PAGE 55

The infusion of Internet and World Wide Web tools is also changing how Liz Claiborne communicates with suppliers and retailers. For instance, the company used to regularly fly in retailers to review new designs, but it now sends the information electronically via the Web.

Another example is a new in-house application that allows retailers to track purchase orders or check the status of transactions instantly. Previously, that information was available only by telephone.

But after having put all this in place, the fashion retailer discovered that many of its customers don't have the Internet connectivity to take advantage of its high-tech makeover.

"For many of our customers, there has quite simply been no compelling reason to get onto the Internet before this," Sullivan said. But he is optimistic that more people will hook up to take advantage of the new functionality. "We think it offers a strategic advantage for small retailers as well as our international associates," he said.

"If you don't manage the business part of [a technology change], you can fail even if the technology part succeeds."
– Naomi Karten, Karten Associates

On the people front, moving from an AS/400 environment to Unix, NT and packaged applications has meant long days and massive retraining for the entire 160-member IT workforce at Liz Claiborne.

"What many organizations don't realize is that if you don't manage the business part of [a technology change], you can fail even if the technology part succeeds," said Naomi Karten, president of Karten Associates in Randolph, Mass.

Apart from training and mentor services, HP's educational services organization is helping Liz Claiborne identify new roles for IT staffers. So far, HP has helped the company identify 29 new roles the IT staff must fill by next year to handle technology changes such as the move to Unix and NT servers. □

Call center puts NCs in the driver's seat

CONTINUED FROM PAGE 55

"If we can shorten call length, it will mean better efficiency, and that's what we're measuring here," Greulich said.

If service representatives in the pilot test can handle more calls in the same amount of time, Roberts Express will go forward with a full rollout, he said.

Roberts Express' Joe Greulich: Going with a PC-based system would have taken too long

The company traditionally has been able to fulfill 96% of its deliveries within the 15-minute window it allows for customers to receive packages.

Greulich said he considered going with a PC-based system in the call center, but it would have taken too long to rewrite the text-based applications in a graphical format.

By putting a Java front end on the green-screen application and running it on the $1,000 Network Stations, users have the look and feel of a PC-based application and are getting better performance than with their aging PCs.

CUTTING COSTS

Greulich said he hopes the thin clients will reduce administration costs because they allow for centralized troubleshooting and software updates.

Still, Greulich said, any company taking on a similar project shouldn't underestimate the amount of work and resources it requires in hardware, programming time, staff training and other costs. Greulich declined to discuss specific cost figures.

Developing an application in Java was no small task, he said. "It's as big a shift as going from Cobol to C" or a fourth-generation programming language, he said.

EARLY PROBLEM

Kathy Brooks, a senior customer service representative who is participating in the pilot, said the Network Station performs better than her old PC. However, tweaking the application to make it work better for end users was tricky at first.

Brooks said an initial deployment required too many steps, which made it slower than the text-based system. But with changes, performance should outpace the legacy application, she said.

Analysts say implementations such as Roberts Express' show how thin clients lend themselves to single-application environments such as call centers.

Gartner Group, Inc., a consultancy in Stamford, Conn., recently estimated that the majority of network computers deployed between now and 2000 will act as green-screen replacements. □

EMC megadrives fit company just right

CONTINUED FROM PAGE 55

protocol (FTP) connections.

Hill said because FTP is "slower than anything that can happen on disk," he didn't worry about the 47G-byte drives' speed. And their large capacity "will let us leave more information online longer," he said.

Hopkinton, Mass.-based EMC added the 47G-byte drives — which double the company's previous top capacity — to its 3700 and 5700 Symmetrix arrays last week. With 128 drives, a single subsystem can house 6T bytes and connect to mainframe, Unix and Windows NT hosts.

"This type of offering is really targeted at users in IBM data centers or large Unix installations seeking the greatest bang for their buck."
– John Webster, Yankee Group

A 750G-byte system starts at $1 million, while a 6T-byte system costs $4.7 million. EMC said the 5.25-in. drives can be mixed with 3.5-in. drives in the same array.

"This type of offering is really targeted at users in IBM data centers or large Unix installations seeking the greatest bang for their buck," said John Webster, an analyst at The Yankee Group in Boston. "With these drives, you can have an awful lot of capacity in one footprint."

Webster agreed that performance may be a problem for some transaction-intensive applications, but he said "a reasonably good-size cache in front could help overcome this."

At the National Center for Supercomputing Applications (NCSA) at the University of Illinois in Urbana-Champaign, Jeff Terstriep said he is sensitive to both price and floor space.

He has 10 supercomputers, 40 RAID subsystems, innumerable NT and Unix servers and a constant thirst for more storage. During a recent project, the simulation of a star the size of the sun generated 3T bytes of data in 10 days.

"With 47G-byte drives, we're looking at 6T bytes in 17 sq. ft.," said Terstriep, senior technical program manager. "Because machine space for us is such a significant factor, we'll experiment with our setup and applications to get the performance we need."

EMC is alone among its main competitors in offering 47G-byte, 5.25-in. drives. Hitachi Data Systems Corp., IBM, Digital Equipment Corp. and Sun Microsystems, Inc. all base their arrays on 3.5-in., 9G- and 18G-byte drives. □

SHORTS

Fujitsu adds notebooks

Fujitsu last week introduced three new LifeBook notebooks, adding two models to its corporate LifeBook 700 series and one thin model to its 600 series. The notebooks ship this month and include the 770Tx, which comes with a 200-MHz Pentium MMX processor and a 12.1-in. display and costs $2,799; the LifeBook 790Tx, which comes with a 266-MHz Pentium MMX processor and a 4G-byte hard drive and costs $3,499; and the LifeBook 690Tx, which comes with a 266-MHz MMX processor, a 12.1-in. display, a 4G-byte hard drive and a 20-speed CD-ROM drive and costs $4,299.

Microsoft sails Armada

Microsoft Corp. has picked Compaq Computer Corp.'s Armada 7800 notebook for its sales force, engineers and consulting group in the U.S. and Canada. The Armada 7800 features Intel Corp.'s new 266-MHz Mobile Pentium II processor and accelerated graphics port implementation.

Gateway cuts prices

Gateway 2000, Inc. in Sioux City, S.D., announced price cuts last week of up to 11% across its entire corporate product line, including desktops, workstations and servers. Gateway is following competitors such as Compaq Computer Corp. and Dell Computer Corp., which have lowered prices in recent weeks.

Intel integrates with CA

Intel in Santa Clara, Calif., last week said it will support Computer Associates International, Inc.'s Unicenter TNG enterprise management product. Users must install an Application Integration Module (AIM) to use CA's product with Intel's desktop and server management technology. Intel's AIM for Unicenter TNG will let users automatically determine which systems have Intel LANDesk Client Manager and LANDesk Server Manager installed.

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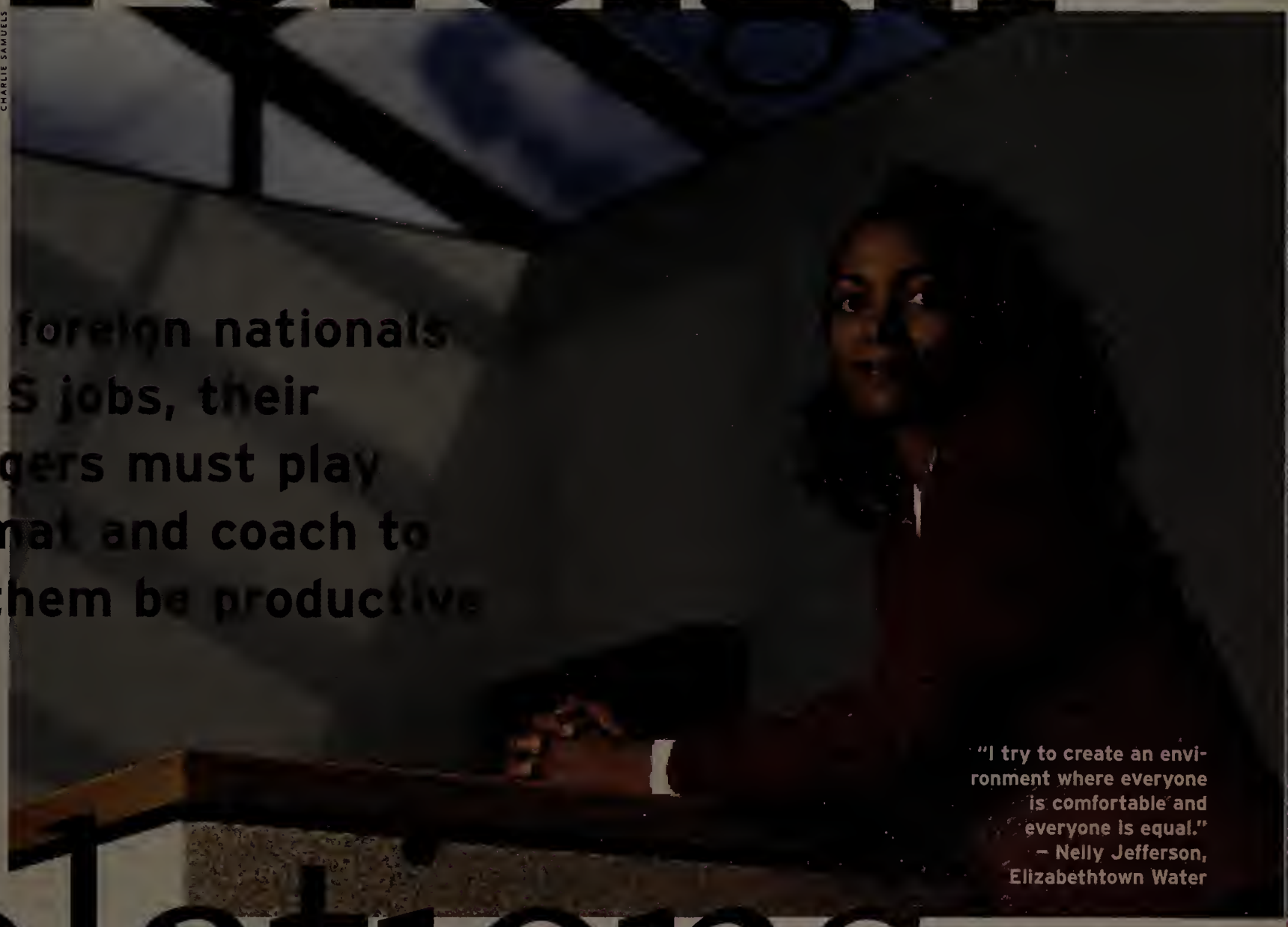
When skills, knowledge pay
Some IS managers see benefits in professional certifications.
Page 64

Managing

Foreign Relations



CHARLIE SAMUELS

"I try to create an environment where everyone is comfortable and everyone is equal."
– Nelly Jefferson, Elizabethtown Water

When foreign nationals take IS jobs, their managers must play diplomat and coach to help them be productive

BY JILL VITIELLO

NELLY JEFFERSON listened carefully to the man sitting across the desk from her. He was speaking English, but his accent was heavy. Jefferson, the information systems manager at Elizabethtown Water Co. in Elizabethtown, N.J., needed a PC support specialist. This man, from Vietnam, met all her technical requirements, but as she interviewed him, she kept thinking about her users. Would they be able to understand him? Should she hire him?

* * * * * *

ROLLOUT WAS THREE WEEKS AWAY. The team would have to work around the clock to install the hardware and software for the interactive retail kiosks throughout the region. Stan Smith wrestled with one big problem. How was he going to convince the Israeli contractors, who were key to the project, that here in the U.S., "around the clock" meant on the Sabbath, too?

* * * * * *

GARY NEWMAN could almost taste the tension in the room. Systems analysts, programmers and project managers sat heavily in their chairs, arms crossed. They glared and were silent. Normally, this was a cordial group of professionals, thought Newman, president of a New York-based computer contracting firm. In his past meetings with them, he had been impressed that this group of people, many of them from Serbia and Croatia, worked in such productive harmony. Now, he was astonished by the unmasked hostility around him.

* * * * * *

Language barriers. Work habits. World events. Those factors and many others have an increasingly powerful impact on the IS workplace — and on IS managers.

As more foreign-born IS professionals from many countries come to the U.S. with their diverse cultures and customs, "it is placing enormous pressure on frontline managers," says Jim Webber, president of Omicron, a consortium of technology companies based in Mountain Lakes, N.J. Managers realize they must be sensitive to peoples' cultural differences, he says, but they have to get the job done, too.

Resourceful IS managers are helping their

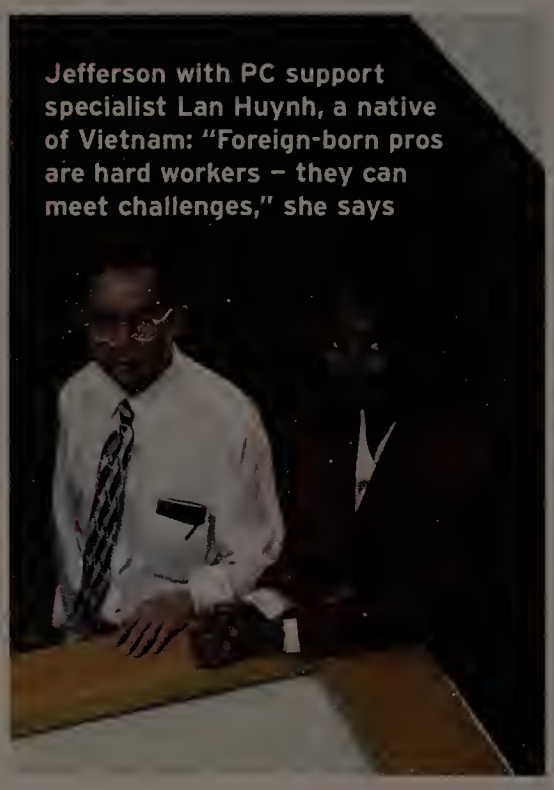
Foreign relations, page 62

Foreign relations

CONTINUED FROM PAGE 61

foreign-born IS professionals become productive in the U.S. business culture. Some draw on personal experience, others use negotiation strategies, and still others call in the experts. But all who successfully manage foreign-born colleagues use common sense and put people first.

Before Nelly Jefferson hired Lan Huynh as a PC support specialist, she put herself in her users' shoes. She decided that if she could understand Huynh's fluent, but accented, English, so could the user community at Elizabethtown Water. She was right.



Jefferson with PC support specialist Lan Huynh, a native of Vietnam: "Foreign-born pros are hard workers – they can meet challenges," she says

CHARLIE SAMUELS

"It took some extra care to help Lan get established," Jefferson recalls. "But he has been able to meet my expectations. Anyone who can move to a new country, and get an education and a job, is an achiever. Foreign-born pros are hard workers — they can meet challenges."

Jefferson's decision, in fact, actually helped her meet the needs of her 230 users, many of whom are from diverse cultural and ethnic backgrounds. Before issuing technical policies or communicating to users, Jefferson bounces ideas off her staff to get their views on how the news will be perceived by people from different backgrounds. Their insights have been an asset to her department.

"IS is customer service," Jefferson says, "and one size does not fit all. I need enough data to come up with good solutions. I can't get that if I look at customer problems from a narrow perspective. That's why I seek out the opinions of a diverse staff."

Jefferson is a native of Ghana, in west Africa. She emigrated to the U.S. with her family, earned undergraduate and graduate degrees in computer science and management information systems and became a U.S. citizen. Because Ghana had been a British colony, the official language is English and the culture and work habits are similar to those in western Europe and the U.S., Jefferson says. So she didn't experience culture shock at school or work.

What surprised her was the "racial boundaries" she encountered as a black woman in the U.S. She recognizes that those same barriers exist for people of many other backgrounds, too.

"I try to create an environment where everyone is comfortable and everyone is equal," she says.

KEEPING THE SABBATH

Before Stan Smith joined John Hancock Mutual Life Insurance Co. in Boston as general director for client/server computing, he worked at a retailer in the city. He was responsible for managing a team of IS staffers and contractors, installing interactive kiosks around the region. Several senior technicians had been brought over from Israel for their technical expertise. They were Orthodox Jews and observed the Sabbath from sundown Friday through Saturday.

"At first it wasn't an issue," Smith recalls. "But as we came closer to implementation, everyone was expected to work around the clock. All of a sudden, we realized that these senior technicians would not be available on Saturdays."

Baffled, Smith asked the contractors how they handled it in Israel. The solution was to work longer days and to give the entire rollout team a break on Saturdays.

"We adjusted the schedule around religious observances," Smith says. "The strange thing is, it boosted everyone's morale because we could all count on at least one day off a week during a really busy time."

At John Hancock, Smith continues to use common sense to manage a diverse workforce of some 120 IS professionals. With employees and contractors from India, Nigeria, Australia, Russia and Europe, he matches newcomers with mentors from their homelands. The seasoned professionals help the neophytes fit in and get up to speed on how business is conducted in the U.S., and specifically at John Hancock.

"We don't compromise on skill sets," he says, noting that several of the projects under way couldn't happen without the influx of foreign-born IS professionals.

WARRING FACTIONS

Most IS managers know how quickly a well-oiled project can become a train wreck when teamwork breaks down. That's what Gary Newman, president of Computer Managers, Inc., observed several years ago when he walked into a meeting of IS professionals whose homelands were at war.

"If I hadn't been aware of the outbreak of the Serbo-Croatian war, I wouldn't have understood the cause of the tension in that room," Newman recalls. "Elections or violent events back home, ancient rivalries and even homesickness have an impact on foreign-born IS pros."

In the meeting, Newman didn't attempt to lighten the mood by addressing the tension or mentioning the war. The IS workers maintained their professionalism throughout the project, but the atmosphere of casual comradery was never restored, Newman says.

One of Newman's employees, a woman from India, had been assigned to a project in the Midwest. The city had no Indian community to welcome this lonely IS professional. Over time, she developed an unrelenting cold that no amount of rest or medicine could cure. She left for India to seek a traditional remedy, then returned to the U.S. to complete the project.

"It helps tremendously for IS managers dealing with foreign-born professionals to get a basic understanding of their culture and anticipate the nuances that can occur," Newman says.

COMMUNICATION IS KEY

"With the potential for misunderstanding and miscommunication that can heat the melting pot to the boiling point, IS managers must understand and adapt to the differences that culture can bring to their business environments," says David Sears of D. L. Sears & Associates, Inc., an IS human resources consulting firm in Morris Plains, N.J.

One way to do that is to offer training in diversity issues. Another is to provide cross-cultural training to U.S.-born and foreign-born IS professionals to improve awareness and understanding of a variety of backgrounds.

"We do not try to take away identity; instead we add to people's repertoire of skills, allowing them to become bicultural," says Deena Levine, a cross-cultural expert in Alamo, Calif., who trains foreign-born IS professionals. "They don't need to become American clones, but they do need to understand the expectations of American business culture."

The customs Americans take for granted can mystify foreign-born professionals.

"Making direct eye contact, giving a firm handshake, speaking up in meetings — all these behaviors that are signs of strength and leadership in the U.S. — are considered inappropriate in many Asian cultures," says Gopal Kapur, a native of India who is president of The Center for Project Management in San Ramon, Calif.

On the other hand, behavior that U.S. citizens regard as common courtesy may not be part of routine manners in many foreign countries. "When foreign-born workers fail to say 'please' and 'thank you' to colleagues, that is interpreted by Americans as rude, even though that's not how it is intended," Kapur notes.

"It's a bottom-line issue," Kapur adds. "When you have a disconnect in communication and understanding of expectations, it has a dollar impact." □

Vitiello is a freelance writer in New Brunswick, N.J.

What you can do

IS managers can bridge the gap between intention and interpretation, thereby increasing productivity, by taking some practical steps, says Deena Levine, a cross-cultural expert in Alamo, Calif., who trains foreign-born IS professionals. She recommends the following:

- **Hold brown-bag lunches to build rapport among foreign-born and native-born workers.**
- **Teach foreign-born professionals the art of small talk by engaging them in it.**
- **Become a cultural informant by suggesting community events and places of interest.**
- **Give permission to express opinions and speak up in meetings.**
- **Explain slang and idiomatic expressions if you use them in your speech.**
- **Acknowledge or celebrate an important holiday of another culture.**
- **Expect a period of adjustment.**

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CERTIFICATION *and* THE BOTTOM LINE

Independent studies are lacking and some IS managers remain dubious, but most see a payoff from certification

By Alan R. Earls

At Prudential Insurance Company of America in Roseland, N.J., they're betting information systems dollars on certification.

"We believe that having highly skilled people really improves the performance of the organization," says Anthony Costa, vice president of IS. "Certification is a cornerstone of a skilled workforce."

Rich Dellisante, director of IS training and development, explains that there have been anecdotal indicators of the effort's effectiveness. "Because we have certified people on our staff, one of our outside service providers has reduced our maintenance charges significantly," Dellisante says. "We are hoping some of our other key providers will consider doing the same."

> "It is more important for contractors and consultants [to be certified]. If I'm going to hire a consultant, I would expect to see that they are certified – it's like the Good Housekeeping Seal of Approval."
>
> – Liz Alexander, Gardenburger

Certification is a process for testing skills and knowledge that results in a statement by the certifying authority that says an individual is capable of performing a particular kind of job. It frequently involves specific, vendor-provided or vendor-endorsed coursework.

Certification seems to have come of age in the 1990s, but Prudential, like other companies, has had to weigh the costs — and risks — associated with getting employees certified against benefits that can be difficult to measure.

To date, there have been no comprehensive, independent studies of the effectiveness and value of certification, although vendors have sponsored several that seem to show certification in a positive light. Despite the lack of empirical data, most managers accept that certification has a role in developing and managing an IS organization.

Mark Cook, director of computer services at the Catholic University of America in Washington, says having certified employees is "like having a ringer on a team."

But he notes: "One of the great fears of every IS manager is spending a small fortune to train someone and then having them take their new certification to a higher-paying position."

As a consequence, managers often try to exchange training for a written commitment that the trainee will stay for a certain period of time. "Then you have to balance that with how much bad will you are going to create" with the trainee, Cook says.

Jeff Mulick, director of technology services at Hollywood Video, Inc. in Wilsonville, Ore., has a similar ambivalence about certification. In hiring and promoting, certification is one factor among many that he considers. In particular, he notes, certified individuals may have depth in just one or two areas but may not have the breadth needed to function successfully in a complex IS environment.

"In the case of Novell certification, our LAN ties into hubs, switches and routers. And to be effective, we would want them to have knowledge in those areas as well," he says. "It's the old joke: Sometimes CNE seems to really stand for Certified No Experience."

COMMANDING HIGH SALARIES

Liz Alexander, director of IS at Gardenburger, Inc. in Portland, Ore., also doubts the effectiveness of certification. She has paid to have staff members become Novell, Inc. certified. Now, though, she worries she may not be able to pay enough to keep them.

But she adds, "In my opinion, it is more important for contractors and consultants. If I'm going to hire a consultant, I would expect to see that they are certified — it's like the Good Housekeeping Seal of Approval."

Indeed, at Sargent & Lundy, a Chicago-based engineering firm, Stephen Orenberg, associate director of corporate information systems, has a rationale for supporting certification. He says he's convinced it provides an added dimension to training and gives his staff something concrete to strive for. But he is also motivated by the fact that his IS department does double duty — sometimes providing engineering clients with consulting work associated with engineering projects.

And, in contrast to Cook, Orenberg says turnover will always be an issue. But "by helping them pursue certification, you probably have a better chance of keeping people loyal to the company," he says. "We have a concern that certified or not, they could walk." □

Earls is a freelance writer in Franklin, Mass.

Facts and independence in question

Although certification by vendors is a comparatively new phenomenon, certification itself isn't. The Institute for Certification of Computer Professionals (ICCP), a nonprofit group, turns 25 this year (*www.iccp.org*).

But Joyce Currie Little, an ICCP board member and professor at Towson State University in Towson, Md., says there has never been a comprehensive independent study of certification.

However, vendors have stepped up to the plate several times to put facts and figures behind their certification programs. For instance, a 1995 survey conducted by International Data Corp. in Framingham, Mass., and sponsored by Drake Prometric, IBM and Microsoft Corp., indicated several positives for companies with certified IS professionals. In particular, the study found that companies that supported certification had server downtime that was half as lengthy and half as expensive as others.

Overall, the authors stated, "the payback time for the certification of one employee [with the employer paying wages and training/testing costs] is less than nine months."

Another study, issued in 1997 by Gartner Group, Inc. in Stamford, Conn., and sponsored by Sylvan Prometric, IBM, Microsoft, Novell and Sybase, Inc. looked at management's perception of vendor training and certification. It showed that management support for certification is growing. In 1994, 65% of corporate managers agreed that it "provides extra value." By 1997, that number had grown to 77%.

Finally, earlier this year, Mastering, Inc., a Scottsdale, Ariz., training company, issued a study that showed that certified professionals, at least those on Microsoft operating systems, brought cost-savings and efficiencies to their organizations.

Of the managers surveyed, 42% agreed or sometimes agreed that the costs associated with certification were recouped through increased efficiency. By contrast, only 4% didn't agree with the statement.

— Alan R. Earls

UNCLE SAM WANTS YOU . . . TO HELP FIX HIS YEAR 2000 PROBLEM

There's a problem all companies face: Key players in their electronic relationship chain are either reporting that they have no budget for handling the year 2000 problem or that they are in the early stages of planning and lack staff.

PETER G. W. KEEN

you do? Drop them? Demand nstrate year 2000 compliance

ey're government agencies.

r not, your company's infor- stems are in partnership with nt information systems. That makes their year 2000 problem *your* year 2000 problem.

At the federal, state and local government levels, IS is woven into the fabric of business. It's an integral part of any firm's supply chain and electronic commerce, as a purchaser, a standard-setter and a catalyst for extending electronic commerce across small and large firms. It affects administrative systems that address workers' compensation, state and local taxes, regulatory compliance, insurance and health care.

There's much here that's positive. Many agencies have IT initiatives under way that will simplify business/government relationships and benefit all of us. The downside is, alas, the virtually guaranteed failure of most public agencies around the world to fix the year 2000 problem.

Even if your firm succeeds in slaying the year 2000 dragon, it won't be able to bypass the federal, state and local government information systems that assuredly won't be fixed. They include the following: state regulatory, licensing, tax and social services agencies; domestic and foreign customs agencies; government procurement and payment systems; and health care agencies.

Why won't these systems get fixed? Just skim the newspapers and IS trade press. You'll read about state government CIOs sounding the alarm and trying to get some budget for handling the year 2000 problem. You'll hear industry experts give Ds and plenty of Fs to government agencies for their progress. Even this year, many if not most agencies are at only the most preliminary stage in a year 2000 strategy: taking an inventory of their systems to get a sense of the size of the problem.

HARDWORKING, BUT UNDERTRAINED

IS groups in most agencies, other than Defense, and almost all local government units are understaffed, overloaded, underfunded and underpaid. Many of the best will leave; they know about the labor shortage and the demand for experienced Cobol and maintenance programmers for fixing the year 2000 crisis.

In my own experience, government IS professionals are hardworking, knowledgeable, responsible and dedicated — forget the "lazy bureaucrat" stereotype. But they're so underresourced, and in many instances, undertrained in new applications and technologies, that they can't do what they know is needed — especially concerning year 2000.

Yet, in many countries, quite literally nothing is being done. One large firm I'm working with operates in many countries, with frequent and complex time-dependent imports and exports of heavy manufacturing equipment. It has to get licenses and approvals from European and Asian governments. Guess what? It looks as if none of the key customs agencies, licensing authorities and ports it deals with has even begun work on year 2000. Several haven't even heard of the problem. Many are using software bought from U.S. vendors and maintained by non-English-speaking IS staff.

In the U.S., IT systems for social services, health care administration and transfer payments are as far down the priority chain for year 2000 as, say, human resource systems are in most companies. The pension and benefits systems in a bank aren't "mission-critical." It's likely they will be year 2000 disasters. The government systems they interact with and depend on will be disasters, too. Companies will be besieged by lawsuits from retired or ill workers put into crisis situations because their workers' compensation, health insurance payments or pensions were misprocessed. It doesn't matter if it's the fault of, say, the state's Department of Social Services — it's your responsibility as an IS manager in the firm where the employee worked.

If government is to be a real partner in fixing the year 2000 problem, business must reach out to the public sector, learn about its systems and work with them. How much does your IS group know about government insurance and licensing systems, for instance? Analyze your business logistics chain and identify the many government agencies it includes. Build contacts with them. Offer help where you can. Set up local workshops for a group of businesses to talk to and hear from government IS managers. Lobby state legislators to provide year 2000 resources to their agencies.

The fundamental new principle in IS is partnerships, partnerships, partnerships — with suppliers, customers, industry consortia, research communities, systems integrators and strategic vendors. Please add government IS to the list. □

Keen's book The Business Internet and Intranets *was published in February by Harvard Business School Press. He can be contacted at peter@peterkeen.com.*

f.y.i.

It pays to NOT think big

If you want to run the information systems department at a large or midsize company, now's not a bad time to do it — at least financially, it seems.

A recent study by Positive Support Review, Inc. (PSR) found that base salary ranges for top-level IS positions grew 18.4% last year for large companies but 21.1% for midsize firms.

PSR, a management consultancy in Santa Monica, Calif., says salaries for the top eight IS positions alone in midsize organizations rose an average of 25.6%.

Supplemental compensation, such as signing bonuses, stock options and club memberships, increased for more senior-level positions, but they rose even higher at midsize companies (19.8%, compared with 17.2% at large organizations).

M. Victor Janulaitis, CEO at PSR, says there's more information technology action at midsize companies (organizations with $100 million to $500 million in gross annual revenue) than at large firms ($500 million and over). He says midsize firms have newer technologies and are looking, for instance, at how they can jump into electronic commerce.

All that prompts a call for qualified IS executives to lead an IT strategy, and midsize organizations "are now paying a premium" to bring them on board.

But large companies, Janulaitis says, are still concentrating on costs and aren't growing.

Even worse for the large companies is that some CIOs at large firms in southern California are taking downward career steps to smaller companies because the money's good, Janulaitis says.

The survey was conducted late last year. PSR received about 3,000 responses from nearly 400 large and midsize organizations in the U.S. and Canada.

— Rick Saia

Executive technology: A review of smart phones.
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GO FOR THE BANDWIDTH

Faster systems are improving the quality of desktop videoconferencing, but the connection speed remains the key factor

BY CHRIS DEVONEY

Driving the benefits of a group videoconferencing system down to individual desktops is easier than ever. In many cases, the equipment costs have dropped almost 40% during the past two years. Additionally, the audiovisual and document-sharing qualities of conference technology continue to improve.

These developments open the door for more employees to use videoconferencing, and many may be doing so already without the knowledge of the IT group (see story, next page).

To get a sense of the state-of-the-art of desktop videoconferencing, I looked at traditional desktop offerings from market leaders Corel Computer Corp., Intel Corp. and PictureTel Corp. I also examined several alternative technologies, such as Universal Serial Bus (USB) cameras from Connectix Corp., Intel and Eastman Kodak Co. and a notebook/camera combination from Winnov Corp.

Of the desktop systems, the Intel products offered the better picture, better versatility and better price when used with an Intel Pentium MMX or Pentium II system. But if you already have group conferencing systems such as PictureTel's, buying a desktop version from the same vendor makes sense.

The alternative solutions, such as the 3Com Corp. Big Picture or Connectix QuickCam VC, have appeared on the market in the past year, and they show promise. All can use Microsoft Corp. NetMeeting for inexpensive network-based or Internet videoconferencing. However, none has the hardware and software needed for all uses, and none provides the software to manage the network bandwidth used for conferencing.

In either case, you can't get the best out of the equipment if the connection that links the participants is too slow. Count on 384K bit/sec. Integrated Services Digital Network (ISDN) as the minimum speed for full-screen, full-motion video with crystal-clear sound. Any slower connection and you compromise the size, clarity and smoothness of the video and reduce the quality of the sound.

A typical desktop videoconferencing system — the equipment added to an existing desktop computer — costs between $1,000 and $2,000 per user, almost $1,000 less than 1996 prices. For the

money, expect a fixed-focused camera and headset that will provide good audio and head-and-shoulder images — also known as the talking head — of the individual at the other end of the conference.

Also expect NetMeeting to be the basis of whiteboarding and data sharing. That lets desktop video systems from varied manufacturers share documents. Because NetMeeting also can handle videoconferencing over TCP/IP, you can use any desktop system equipped with either a videoconferencing system or a camera/capture board and sound board.

The key to the audiovisual quality available through each videoconferencing product is the type of connection. If you connect through a LAN or a 384K bit/sec. (six B-channels) ISDN line, you will see full-screen, full-motion, 30 frame/sec. video and hear radio-quality audio.

At 128K bit/sec. (two B-channels, also known as Basic Rate) ISDN, most equipment will provide AM radio-quality audio, but the video will be presented in Common Intermediate Format (CIF) — 356- by 288-pixel resolution that equals quarter-screen size. That video will run at 12 to 16 frame/sec. with jerky motion and some loss in clarity. If you use a MMX processor and optimized software, the frame rate jumps to 22 to 30 frame/sec., but some jerkiness remains.

If you use dial-up phone service, called plain old telephone service (POTS), expect 6 to 12 frame/sec. of Quarter CIF or 176- by 144-pixel resolution. POTS also means meager video quality, scratchy sound and poorly synchronized audio. The lips move, then you hear the sound a split-second or more later. Using the Internet as the conferencing connection simply adds propagation delays of up to six seconds to the problems associated with the data connection speed.

Although faster processors help, you'll get the best conferencing by using the fastest possible connection (384K bit/sec. or faster) and by using a system whose software was designed for MMX processors. If you have to go with a slower pipeline, an MMX or Pentium II provides some help if your software was designed for that architecture. □

DeVoney is a reviewer in Seattle. He can be reached at chrisd@cybercritic.com.

ALTERNATIVE SOLUTIONS

Some users are "backdooring" videoconferencing into the corporation, just as the early PCs were smuggled in years ago. These conferencing systems are likely to be entry-level products that cost $99 to $350.

If you use these products for conferencing over the LAN, the quality is as good as that of the high-priced units. But none of the units provides a complete solution.

The least-expensive examples are based on cameras that use USB — for which a wave of products were built late last year. They include cameras such as the $199 Intel Create-and-Share pack and the $125 Connectix QuickCam VC (*www.connectix.com*).

Optically, each camera works at about 356- by 240-pixel resolution because USB won't handle 640- by 480-pixel video at 30 frame/sec. rates. Over a network, CIF resolution video is acceptable. Connectix offers videophone software for both POTS, with poor quality, or ISDN, with average quality.

The $200 Eastman Kodak DC324 USB camera (*www.kodak.com*) is a full-screen camera, does compression in hardware and will produce 30 frame/sec. video with little distortion. But Kodak provides no dial-up conferencing, and a separate audio board and microphone is still required.

The Peripheral Component Interconnect (PCI) bus has the bandwidth for full-screen, full-motion video, which means that products such as 3Com's Big Picture (*www.3com.com*) and Intel's Create-and-Share PCI package combine a capture card, camera and optional 56K modem ($350 with modem, $300 without). Both work over a network, but the 3Com product has slightly sharper video and a built-in microphone. Both can be used for conferencing over POTS with questionable quality but don't work over ISDN.

For notebooks with PC Card slots that offer Zoom Video, the $249 Winnov PCMCIA-based capture card and camera (*www.winnov.com*) produced a somewhat dark image with about 10 to 14 frame/sec. CIF-size images on a Gateway 2000, Inc. Solo notebook. The combination works with NetMeeting over a network but includes no dial-up conferencing software.

None of these packages includes management software to limit the bandwidth demand of the products over the corporate LAN. Without those controls, the packages could further clog already-stalled networks.

— Chris DeVoney

		PRICE PER SEAT	SYSTEM REQUIREMENTS	APPLICATION				TECHNOLOGY	PERFORMANCE	COMMENTS
				Campus	Remote	LAN	Internet			
Corel Computer Corp. B- *www.corel.com*	CorelVideo Corporate	$1,795	Any 66-MHz 486 or higher	Yes	No	Yes	Yes	External unit connects between desktop and a central controller via twisted pair in Category 5 LAN wiring.	Excellent quality, full-motion, 30 frame/sec. video.	Corel products are more expensive and less flexible than competitors'.
	CorelVideo Remote	$1,795	Any 66-MHz 486 or higher	No	Yes	No	Yes	Single Industry Standard Architecture (ISA) or PCI bus card. Uses 128K bit/sec. ISDN connection; $495 card for 384K ISDN connection.	At 128K bit/sec. ISDN: acceptable quality, quarter-screen video at 12 to 14 frame/sec. At 384K bit/sec. ISDN: good quality, full-screen images.	Unit doubles as ISDN adapter for calling data networks and Internet service providers.
Intel Corp. B+ *www.intel.com*	Intel Business Video Conferencing (IBVC)	$1,199	166-MHz or higher Pentium MMX or Pentium II	Yes	Yes	Yes	Yes	PCI board (audiovisual) and ISA board (ISDN adapter).	At 128K bit/sec. ISDN: high-quality sound and good quality, quarter-screen video at 22 to 30 frame/sec. At LAN speeds: high-quality sound and good-quality, full-screen video at 30 frame/sec.	Best video systems at 128K bit/sec. ISDN and most versatile of all desktop conferencing systems. Relatively inexpensive, but options can extend the price.
	Intel ProShare 200 Video Conferencing System	$1,795	Any 66-MHz 486 or higher	Yes	Yes	Yes	Yes	Either PCI or ISA audiovisual board plus ISA-to-ISDN adapter.	At 128K bit/sec. ISDN: telephone-quality sound and good-quality quarter-screen video at 12 to 16 frame/sec.	Remains a good choice for older systems. Can require options such as IBVC product.
PictureTel Corp. B *www.pictel.com*	LiveLAN	$1,195	Any 66-MHz 486 or higher	Yes	No	Yes	No	Single ISA or PCI bus card.	Excellent quality, full-motion video at 30 frame/sec.	Requires $2,399 gateway for H.320 (ISDN) conferencing.
	Live200	$1,195	Any 66-MHz 486 or higher	No	Yes	No	Yes	Single ISA or PCI bus card; optional $495 ISA card for 384K bit/sec. ISDN connections.	At 128K bit/sec. ISDN: good sound and video at 12 to 18 frame/sec. At 384K bit/sec.: excellent sound and full-screen video at 30 frame/sec.	Aging but has the best sound of all systems, includes a full-duplex speakerphone and works best with PictureTel room conferencing systems.

EXECUTIVE TECHNOLOGY

SMART PHONES

By Howard Millman

Six months from now, you will have a dozen or more choices of wireless telephones that will send and receive E-mail and faxes while also providing World Wide Web access. Today, the pickings are slim. I evaluated three phones that you can use to receive and send important data while away from the office: the portly Nokia 9000I, the comparatively primitive Samsung Duette and Motorola's StarTac plus Cellect modem that jacks in to your notebook's PC Card slot and lets you exchange data with greater ease and speed than either the Nokia or the Duette. Here are quick looks at the products and need-to-know buying information to help you decide what's best for you.

Nokia, Inc.
Irving, Texas
(800) 665-4228
www.nokia.com
PRICE: 9000I Communicator — $800

Nokia's 9000I establishes a new high-water mark for smart phones. An engineering sensation, this hybrid handheld contains both a high-quality phone and a complete digital assistant that includes a minikeyboard. It's powered by an Intel Corp. 386 CPU and runs Geoworks, Inc.'s easy-to-use graphical operating system, Geos. You can readily connect the device to your desktop computer to enter and update contacts, addresses, phone numbers, calendar data and more. You can connect with cable or an infrared link to PCs and printers.

On the downside, the unit's 14-oz. weight combined with its bulk makes it too heavy and large to carry in a pocket. And despite the clarity of its 1.5- by 4.7-in. LCD display, it still can't compare with a color display when reading text or browsing the Internet. Indicative of the fast-changing phone technology, Nokia recently introduced a successor, the Model 9110, which can take and transmit photos.

Motorola, Inc.
Libertyville, Ill.
(888) 782-7822
www.startac.com
PRICE: StarTac 7000G — $400
Cellect PC Card modem $300

This duo offers the best of all worlds: an ultralightweight digital phone that transforms itself into a data exchange system by connecting to your laptop with Motorola's Cellect 1 PC Card. The StarTac's small, bright two-row by 12-character LCD is more than enough for displaying dialing and system notifications.

The StarTac offers outstanding voice quality, an internal phone book, Caller ID, call forwarding/waiting and extended menus in English, French and Spanish. And all that fits into a package small enough to carry in a shirt pocket or an evening bag.

Samsung Telecommunications America, Inc.
Richardson, Texas
(888) 987-4357
www.samsungtelecom.com
PRICE: Duette – $299

If you opt for analog service because of its superior coverage in the areas you frequent the most, then consider the Duette. Compared with the Nokia 9000I and the StarTac, however, the Duette finishes last.

The device's fuzzy, four-line by 16-character display makes reading messages hard on your eyes and your patience. What's more, creating messages with the Duette's dual-mode keypad is impractical. For example, to type the letter "C," you have to press the number "2" key three times. A one-paragraph message can take five minutes to write. The phone can't receive graphics, which eliminates Web surfing.

On the plus side, you can use the Duette as a modem by connecting it to your laptop with a standard RS-232 serial cable.

As an analog phone, the Duette provides coverage throughout most of the U.S., including rural areas. But for digital data exchanges it uses AT&T Corp.'s PocketNet Cellular Digital Packet Data service, which is available only in selected areas. PocketNet costs about $30 per month in addition to voice service. □

Millman operates Data System Service Group LLC, a consultancy in Croton, N.Y. You can reach him at (914) 271-6883 or hmillman@ibm.net.

@ COMPUTERWORLD

For more smart phone-buying considerations, a glossary and statistics, go to: *www.computerworld.com*

ANALOG VS. DIGITAL?

The first step in selecting a phone is to decide if you want analog or digital service by determining what the carriers offer in the areas where you work, live and visit.

ANALOG'S BENEFITS:
- Widest coverage in the U.S., including rural areas
- Adequate voice quality

ANALOG'S DISADVANTAGES:
- Lacks extensive coverage in Europe and Asia
- Can't readily transmit graphics or data such as text and numbers
- Limited or nonexistent security and encryption services
- Limited or nonexistent availability of add-on features such as Caller ID and call waiting

DIGITAL'S BENEFITS:
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In Depth

TIP SHEET: Internet productivity

BY DANIEL P. DERN

Users often treat information systems as a one-stop uniform resource locator shop, as if you've got nothing better to do than surf the Web all day looking for juicy sites. "What's a good site for news?" they ask. "What's the best stock ticker?" "How can my mom look up her long lost auntie?"

Well we're here to help. To save you time, we gathered tips and favorite useful World Wide Web sites from a panel of serious power users. Clip and save this article, then put a stack of photocopies out for users.

THE EXPERTS

DANA BLANKENHORN: Editor of the online newsletter "A Clue . . . to Internet Commerce"

KEN GREENBERG: Neon artist and Web designer

DANIEL S. JANAL: Speaker and best-selling author of *Internet Marketing Handbook*

FELIX KRAMER: Online marketing and promotion specialist and founder of Constructors in Palo Alto, Calif.

DOUG MOHNEY: Director of marketing at SkyCache Service, Inc. in Laurel, Md.

JAMES "KIBO" PARRY: Internet legend

ROB RAISCH: Online business strategist at Internautics Design, Inc. in Racine, Wis.

JOEL SNYDER: Principal at Opus One in Tucson, Ariz.

JEFF UBOIS: Internet consultant in San Francisco.

NEWS

RAISCH: Headliner from Lanacom (*www.lanacom.com*). Automatic browser for Web pages that have recognizable formats and changing content. "Lets me extract everything about a topic."

RAISCH: Inquisit news service (*www.inquisit.com*). "They have news feeds from professional news sources, and they E-mail your choice of summaries or clickable headlines for $30 per month."

KRAMER: NetMinde's URL-minder (*http://minder.netmind.com*). "I register the home, staff or news page of start-ups I'm watching so that I hear quickly whenever they announce new developments."

REFERENCE

UBOIS: Yahoo (*www.yahoo.com*), BigBook (*www.bigbook.com*). Looking up business, maps, driving conditions.

MOHNEY: Switchboard (*www.switchboard.com*). Maps and directions.

SEARCHING

RAISCH: WebFerret (*www.webferret.com*). "Goes to the major search engines — you can select which ones — and integrates and collates the results in a very easy-to-use form."

RAISCH: AltaVista. "For simple searching, like looking for Perl code."

RAISCH: DejaNews (*www.dejanews.com*). "Even though [Usenet] has become a cesspool."

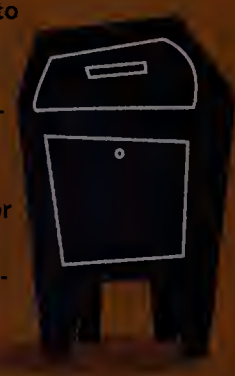
BLANKENHORN: AskJeeves (*www.askjeeves.com*). Lets you ask questions different ways and get answers from many search engines at once. "Don't limit yourself to the same old search engines."

GRABBING AND SAVING

JANAL: WebWhacker (*www.bluesquirrel.com.whacker*). Captures all text and pictures from a Web page or series of Web pages. "As opposed to a screen grabber, which only grabs what's on the screen, but not the links, audio, etc."

Dern is an Internet writer and speaker in Newton, Mass. His Web site is www.dern.com.

Mailbag



These days, it's essential to know how to handle the steady stream of E-mail messages effectively — not just to block or remove spam, but also to prioritize messages you do or might care about.

Most of the experts we interviewed have a strategy for sorting their E-mail.

"I filter my E-mail using Eudora so that mailing-list messages go to separate places," says Ken Greenberg, a neon artist and Web designer. "When I have correspondence over a particular project, it goes to another place."

"My default mailbox is for correspondence," says Daniel Janal. "I set up a separate folder for the newsletters and other frequent E-mail I get."

Joel Snyder says, "I have different E-mail profiles for when I'm at home, when I'm superbusy at home, when I'm on the road, when I'm out of the country and when I'm on vacation. It took me a day to set them up, but it only takes me 10 seconds to activate any one."

James "Kibo" Parry, Internet legend, says, "Save all your incoming and outgoing mail. I package mine up into archives quarterly and clean out the mailboxes to keep them from getting huge. You never know when you'll want to search for someone's return address or a URL someone mentioned." In fact, Parry advises, "Save anything good you see on Usenet or the Web, because it won't be there the next time you need it."

— Daniel P. Dern

IT Careers

COMPUTERWORLD'S ANNUAL Consultants SALARYSURVEY

BREAKING the BANK

Salaries for IT consultants are skyrocketing, sending profit margins plummeting. It means consultancies must raise rates or turn down business By Emily Leinfuss

charles edwards

Rising consultant salaries have Pritchard and Associate's Nancy Pritchard spinning as she tries to keep up and stay profitable

The intense pressure of rising salaries and the lack of qualified IT consultants has recruiter Nancy Pritchard on the go.

Passive recruitment methods, such as running help wanted ads, are fruitless. Instead, Pritchard is on the phone most of the working day, networking to find qualified consultants for her clients. The good news is that demand has driven up her fees. "Rising salaries mean bigger fees for me," says Pritchard, president of Pritchard and Associates, Inc., a consultant recruitment firm in Stafford, Texas. The bad news is that salaries are rising so fast they

Salaries for IT consultants

JOB TITLE	JOB DESCRIPTION	EXPERIENCE LEVEL FACTOR *	AVERAGE ANNUAL SALARY+	AVERAGE ADDITIONAL BONUSES+	AVERAGE TOTAL COMPENSATION+
Research associate	Supports the activity of entry-level and management consultants.	Low level	$35,000	$0	$35,000
		Midlevel	$49,000	$2,000	$51,000
		High level	$65,000	$5,000	$70,000
Entry-level consultant	Has little or no consulting experience. Has developed process/systems analysis and implementation skills.	Low level	$30,000	$0	$30,000
		Midlevel	$40,000	$2,000	$42,000
		High level	$51,000	$8,000	$59,000
Management consultant	Has 1 to 3 years of project experience. Doesn't manage others. Is responsible for process/systems analysis and implementation for a portion of the overall project.	Low level	$45,000	0	$45,000
		Midlevel	$60,000	$5,000	$65,000
		High level	$80,000	$10,000	$90,000
Senior consultant	Has 3 to 5 years of project experience. Responsible for overall project management, including deliverables and schedule.	Low level	$59,000	$2,000	$61,000
		Midlevel	$70,000	$8,000	$78,000
		High level	$100,000	$15,000	$115,000
Junior partner	Manages other consultants, resells the services of the consultancy and manages client portfolios.	Low level	$70,000	$3,000	$73,000
		Midlevel	$84,000	$10,000	$94,000
		High level	$125,000	$30,000	$155,000
Senior partner	Top executive for a consulting organization. Manages and markets the services of the consultancy.	Low level	$85,000	$1,000	$86,000
		Midlevel	$120,000	$15,000	$135,000
		High level	$225,000	$35,000	$260,000

*** Legend:** Low level = 30th percentile for the salary range Midlevel = 60th percentile for the salary range High level = 90th percentile for the salary range + Figures for 1997

Methodology

Computerworld conducted a nationwide survey of IT consultancies to determine average annual salaries and average additional compensation. The survey was conducted in January. A total of 251 responses were received.

Number of IT consultants:
Mean 860
Median 30

Number of employees:
Mean 5,663
Median 145

Organization's estimated 1998 annual revenue or assets:
Mean $475M
Median $45M

Response by business:
Business consulting 22.7%
IT consulting/systems integration 51%
VAR 11.2%
Computer retailer 4%
Manufacturer of computer hardware or peripherals 4.7%
Other 10%

quickly eat up profit margins on contracts.

And Pritchard's clients are bending over backwards to convince contractors and consultants to stay — permanently. They are offering large sign-on bonuses, additional vacation time and "anything else they can think of," she says.

Such offers can be tempting to a consultant who has the early lead on a hot skill. After all, Pritchard says, "next year, if those skills aren't at a premium, the consultant would drop to the same base salary as any other analyst."

In the meantime, talented information technology consultants are increasingly hard to find. As in the corporate IT and vendor IT job market, top skills are coming at a high price. And that is forcing many consultant companies to turn down new business and figure out new ways of pricing, says James Pidcock, branch manager at Renaissance Worldwide, Inc., a systems integration firm in Columbus, Ohio. "Because of the market conditions, as far as consultant salaries go, we have had to put down large clients — those who only offer artificially low bill rates," he says.

And the firm has had to comply with the demands of fixed markup pricing — a trend that allows clients to see where all the fees are dispersed in a consulting engagement. "We have to disclose what the consultants are making. As a result, we have had to raise the bill rates because our costs are increasing," Pidcock says.

What kind of salaries are we talking here? *Computerworld*'s first Consultants Salary Survey reports that an entry-level consultant makes $30,000 to $51,000. A management consultant with one to three years of experience can expect to earn $45,000 to $80,000. Senior consultants' salaries range from $59,000 to $100,000.

Many IT consultants placed with corporate IT departments are earning close to the chief information officer's salary, if not more. And consultancies are raising entry-level salaries to outpace user companies and vendor companies that are vying for the same scarce talent.

Pritchard says the differences between starting salaries and salaries the more experienced professionals command aren't great at some consultancies, because it takes a lot of money to hire new IT consulting talent.

And there is a fine line between those levels.

"In our business we sell brains by the hour. We have to hire the best-of-breed person — someone who doesn't need a lot of ramp-up and training," says Bruce Kiley, a senior network engineer at Siemens Business Communications in Burlington, Mass.

The bottom line: There is no such thing as an entry-level consultant, says Jeff Sardis, presi-

Breaking the bank, page 72

Top project demand for IT consulting

Consultancies say they commit their consultants most frequently to the following projects:

Project area	Averages
Systems integration (84% reporting)	45%
Other (171 of 251 reported zero for other. And 32% of groups reported "other")	40%
Business process re-engineering (49% reporting)	25%
Enterprise resource planning (Only 19% of all organizations answered)	19%
Data warehousing/data mining (54% reporting)	18%
Year 2000 conversion (48% reporting)	18%
Electronic commerce (49% reporting)	16%
Security (45% reporting)	14%

BREAKING the BANK

CONTINUED FROM PAGE 71

Top draws, top dollars

How the industries that reported the largest hiring demand for IT consultants stack up with salaries (based on combined salaries for consultants and junior partners)

Industry	Average annual salary	Average additional bonuses	Average total compensation
Computer hardware, software, peripherals	$64,686	$5,606	$70,292
Financial services	$60,456	$8,288	$68,744
Automotive	$59,290	$9,184	$68,474
Telecommunications	$62,586	$3,793	$66,379
Government	$56,063	$3,302	$59,365

dent of Spectrum Concepts Consulting Corp. in New York.

So how do consultants earn more money if they need experience even at the entry level, and are paid well to begin with, but aren't given salary raises?

The various methods involve career paths, incentives and bonuses. The *Computerworld* poll reports that bonuses range all the way up to $15,000 annually within entry-level and midrange jobs. And as consultants rise, they earn more. Junior partners earn $70,000 to $120,000 in salary, with $3,000 to $30,000 additional compensation. Senior partners earn $85,000 to $225,000, with $1,000 to $35,000 in additional compensation.

The first way to earn more is for salary and incentives to be tied to bringing in business. For example, Tim Grace, area product manager at software vendor ADP in Roseland, N.J., decided to move completely into sales but says the idea of a commission dies hard. "In this organization the base salaries start high, but they plateau quicker with the idea that you have to prove your worth," he says.

The compensation for consultant "rainmakers" can be much higher than the averages the survey reports, says Paul Kors, management partner at Four Partners, a recruitment firm in Santa Monica, Calif. "The dollars can be astronomical. Someone who brings in the clients can make $350,000 to $600,000."

The second way to make more money as a consultant is to meet project management goals and have high-end technology skills. Pidcock says his organization pays more for consultants who run projects and corporate programs.

For example, the firm has a year 2000 program that was designed to meet various clients' year 2000 issues. The manager of the entire program, as well as the project managers, are better compensated than a consultant without management responsibilities.

Pritchard says there is a new trend in the consulting world called "at-risk salary" that bases salary bonuses on company performance. "If the firm earns all its objectives or more, project managers and consultants will receive a bonus, almost like profit-sharing," she says.

But there are some in-demand technology skill areas that consulting companies will pay more to get, Sardis says. "If you have made it into the top 20% of earnings, you are probably involved in Internet-related work, or [enterprise resource planning] software, and you are a project manger," he says. Or you could be a business analyst with a specific application expertise, he says.

The third way to earn more relies on your firm's payment policy. Some consultants earn more simply by working more hours. "Many firms offer a lower salary and then more for hours or projects completed," Grace says. At worst, you can be "put on the beach," which means you aren't on a project but are just collecting the base salary, he says. To stay off the shore and in the water, Grace says you must understand technology at many levels and communicate that understanding to management. □

Leinfuss is a freelance writer in Sarasota, Fla.

charles edwards

A kinder, gentler lifestyle

The image of the lonely, overworked, road-weary consultant is changing fast.

The stereotype of the IT consultant as a lone wolf, traveling airways and highways, working long hours and getting paid only for work completed is just that — a stereotype.

More and more, consultants are salaried employees with benefits such as 401(k) plans, sick leave and tuition wavers. Driving the change has been the recruiting challenge of luring IT's best. "Consultants have gotten so expensive that companies have had to offer compensation other than salaries," says Nancy Pritchard, president of Pritchard and Associates.

The travel component is changing too, says Jeff Sardis, president of Spectrum Concepts Consulting. "Contract workers for smaller and midsize consulting firms rarely travel," he says.

At his firm, consultants usually are working a job in the New York, New Jersey, or Pennsylvania area and can commute daily.

— Emily Leinfuss

Best markets for IT consultants

According to hiring projections for 1998, IT consultants and contractors will be distributed regionally as follows:

Source: *Computerworld*'s Spring 1998 Quarterly Hiring Survey

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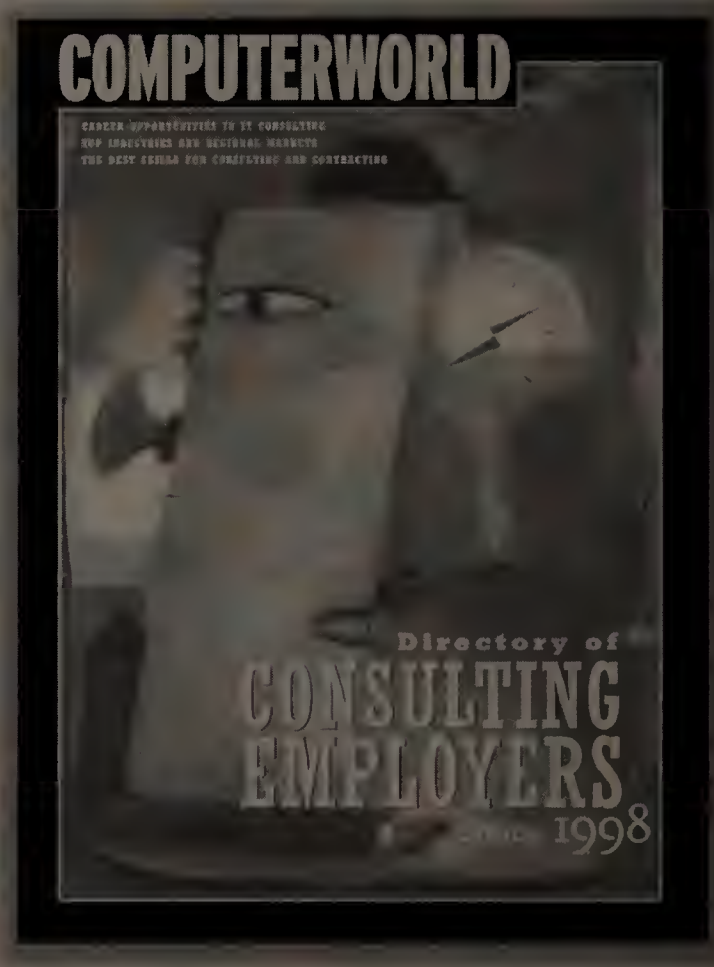

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Lincoln, Omaha, Des Moines, St. Louis and Kansas City

By Leslie Goff

Hey, New York they ain't! But these Midwestern cities offer something the Big Apple never could — IT jobs aplenty *with* a sane life

Omaha and Lincoln, Neb.; Des Moines, Iowa; and St. Louis and Kansas City, Mo., share more than just Midwestern charm and down-to-earth values: Each city's crunch for information technology skills is exacerbated by recruiting challenges.

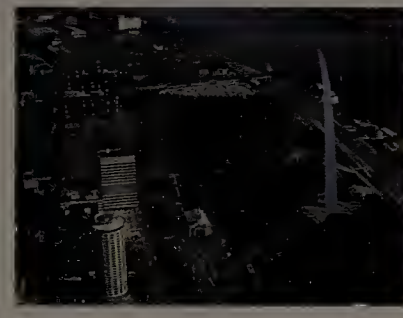
The cities have significant IT opportunities but lack the mystique of relocation destinations such as Seattle, Boston, New York and San Francisco. But the heartland merits strong consideration by IT professionals who want a lower cost of living, higher quality of life, the freedom to write their own career tickets and the opportunity to resettle in a family-friendly environment.

WHAT'S THE IT PAY?

Average IT salaries for selected job titles in Nebraska, Iowa and Missouri

CIO/vice president of IS/IT	$97,000
Director of systems development	$82,000
Director of IS/IT	$60,000
Project leader	$49,000
Senior programmer/analyst	$48,000
Senior systems analyst	$46,000
LAN manager	$45,000
Webmaster/Web designer	$45,000
Programmer/analyst	$39,000
Network administrator	$36,000

Source: *Computerworld*'s 1997 Annual Salary Survey



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LINCOLN

Lincoln, the state capital and home to the University of Nebraska, is the kind of city people don't want to leave once they've settled in, says Terri Parson, a management and workforce development consultant in the city. And they usually don't have to leave if they're willing to work for smaller companies. Parson says 92% of Lincoln's 8,000 employers are companies with 20 or fewer employees.

"We have a lot of information systems jobs, but not necessarily with big companies," Parson says. "A lot of people want to work for larger companies when, in fact, some of the better job opportunities are with those smaller companies."

To build up the IS workforce, the Lincoln Partnership for Economic Development has considered creating boot camps where people in the welfare-to-work system could get "fast-track IT training so they can qualify for high-paying, family-sustaining jobs," Parson says.

OMAHA

Omaha has been one of the nation's most aggressive cities in recruiting and retraining people to fill IS positions. Those efforts have increased the supply of IS professionals, but the demand continues to grow.

Employers such as The Mutual of Omaha Cos. and Union Pacific Railroad are clamoring for IS professionals to staff year 2000 conversion projects, World Wide Web site development and client/server application projects.

"Three years ago, we were saying we needed 1,000 new IT professionals every year. Now it's 1,500 to 2,000. The demand is not abating," says Robert Sweeney, director of the Applied Information Management Institute (AIM), an organization created to address the local IS labor gap.

AIM's job search site, CareerLink, has doubled in size in the past 12 months. The site now includes 100 company listings and posts a wide array of IS positions.

DES MOINES

Des Moines, one of the top three cities in the world for insurance companies, is largely a one-industry town. But in the current economy, it's a boom industry. "Life and annuity products are big now because consumers are saving. So all our companies are growing," says Kim Knoll, an IS recruiter at Executive Resources Ltd. Combine that growth with year 2000 project demands and a low local unemployment rate, and you have an industry that will do just about anything to snag IS professionals.

Knoll says qualified IS candidates can garner as many as three job offers within two weeks, and salary offers have outpaced the cost of living.

Networking and IT infrastructure, application development and year 2000 conversion are the IS areas with the greatest shortage of professionals. Skills in demand include Windows NT certification, Visual Basic, PowerBuilder, Lotus Notes, Oracle and Delphi.

ST. LOUIS

The Gateway to the West is at a crossroads, poised for growth but facing several economic development challenges, including positioning the workforce to fill employers' needs — particularly for IS skills.

Several education initiatives are under way to round out local technical talent, but area employers also are revising their human resources policies to draw out-of-town candidates.

Jeannie Jones, a vice president at IS recruiting company Executive Career Consultants, Inc., says many of her clients are offering three weeks of vacation the first year; flexible schedules, including four-day workweeks; sign-on bonuses; business-casual dress environments; and telecommuting options.

Jones' company averages more than 100 openings for Oracle database administrators and developers, data warehouse positions, Unix systems administrators, Windows NT network administrators and object-oriented application developers.

KANSAS CITY

Barbecue and baseball are two of Kansas City's claims to fame. Now add a business blitz. In the past five years, companies as diverse as Toys R Us, Inc. and Harley-Davidson, Inc. have relocated major operations or expanded facilities in the area, creating many jobs.

In fact, the only thing that will slow down IS professionals willing to relocate here is the time it will take them to move. Those with experience in AS/400, object-oriented application development, help desk/end-user support and LAN/WAN environments can garner as many as five to 10 job offers in as little as two weeks' time, says David White, a certified personnel consultant and president of Tech Link, an IS recruiting firm here. The toughest aspect of recruiting, he says, is balancing IS professionals' salary expectations with the local cost of living. □

Goff is a freelance writer in New York.

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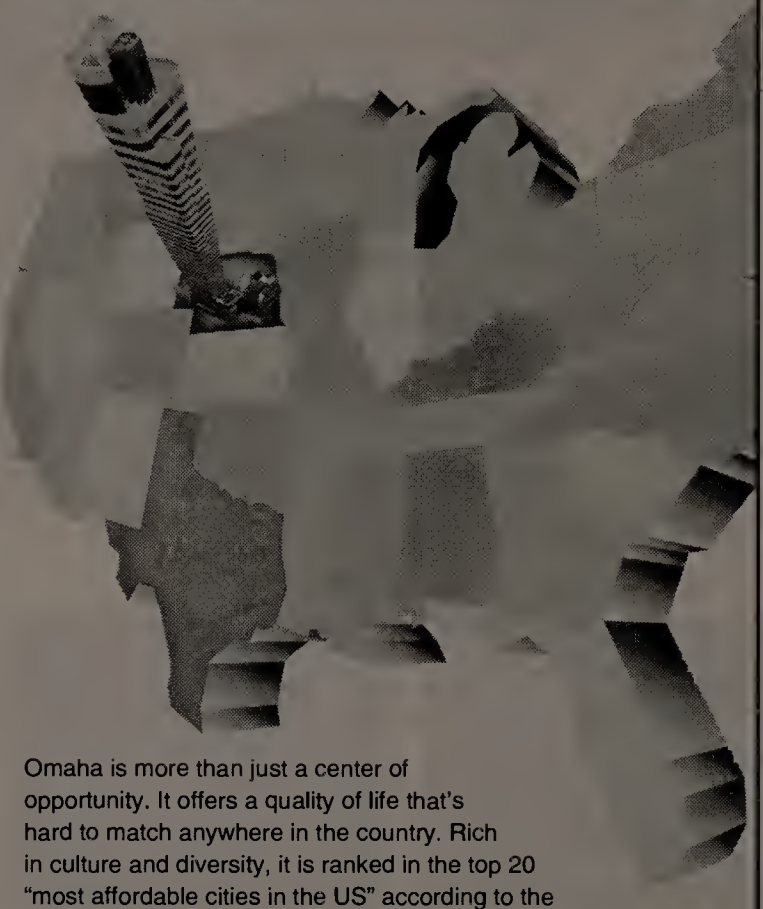

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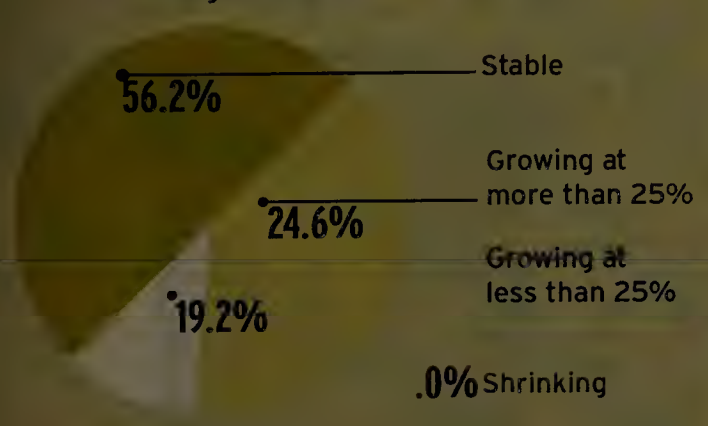

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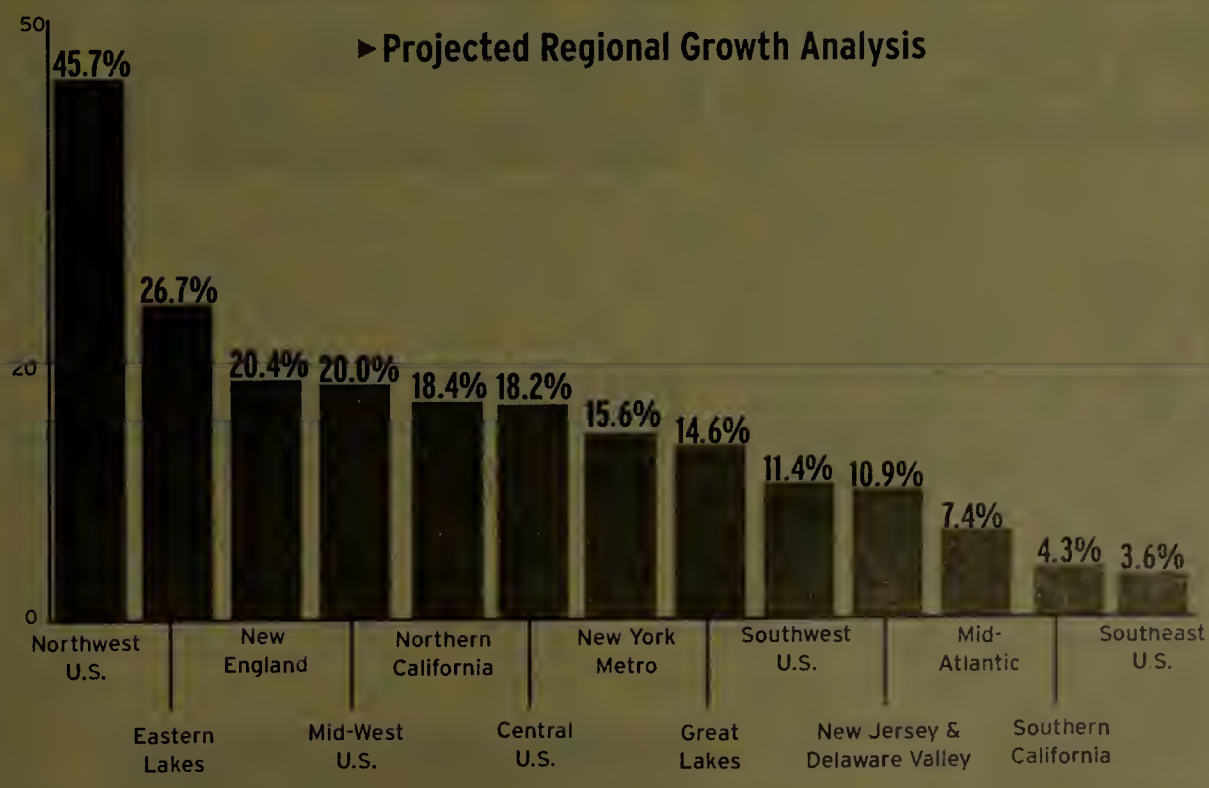

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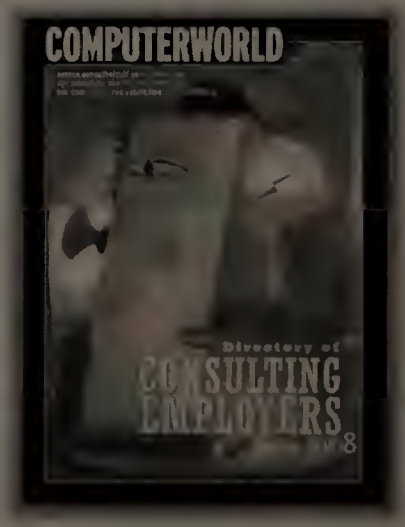

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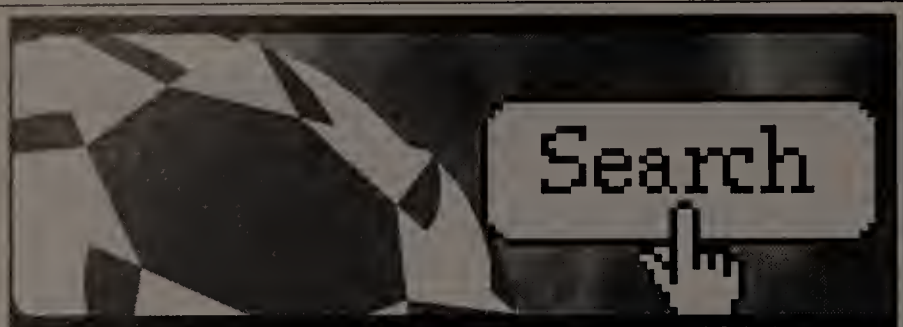

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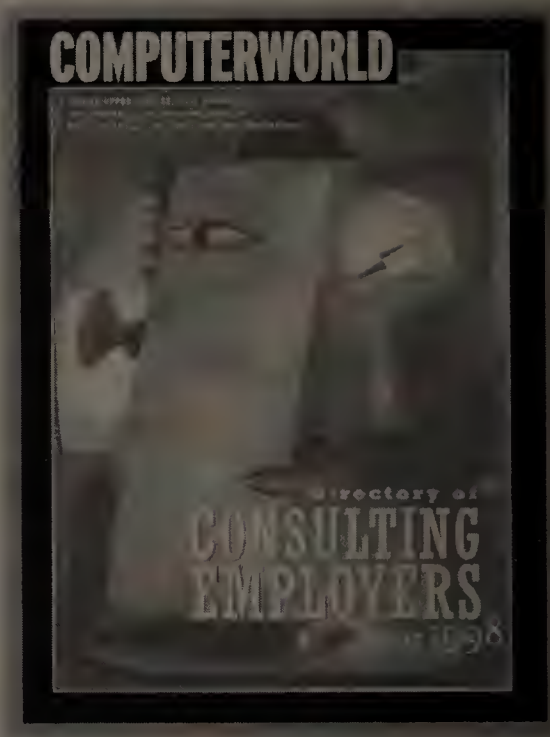

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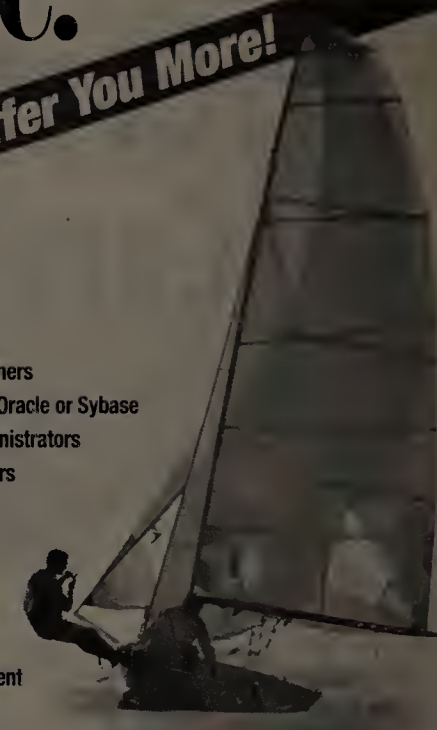

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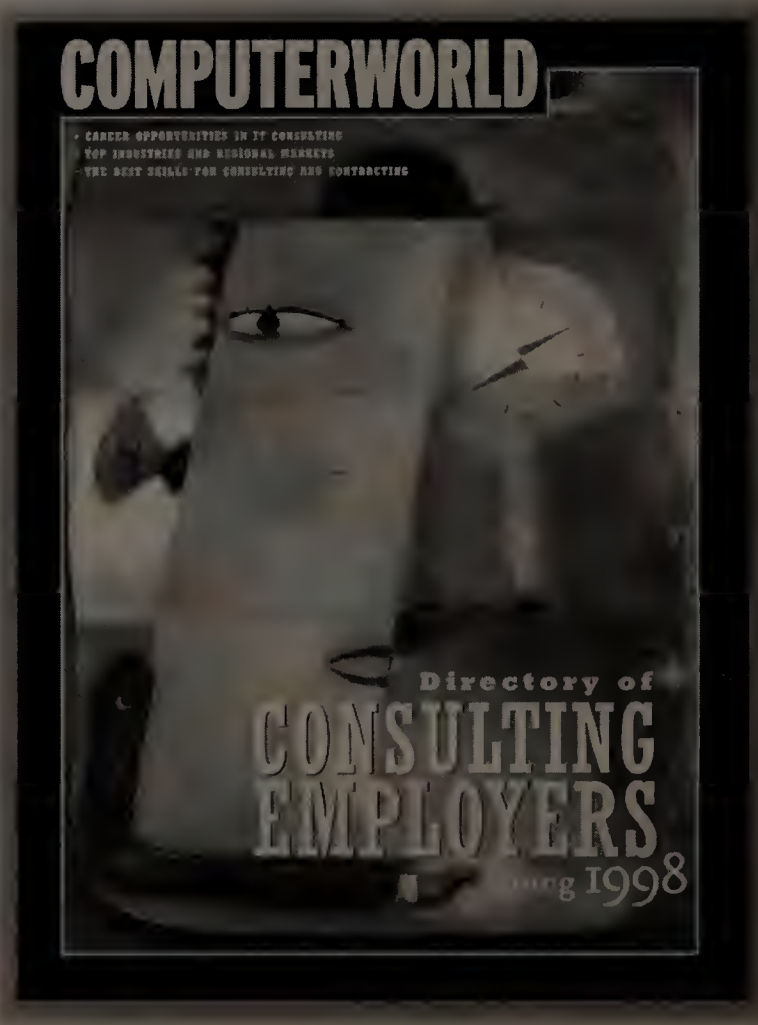

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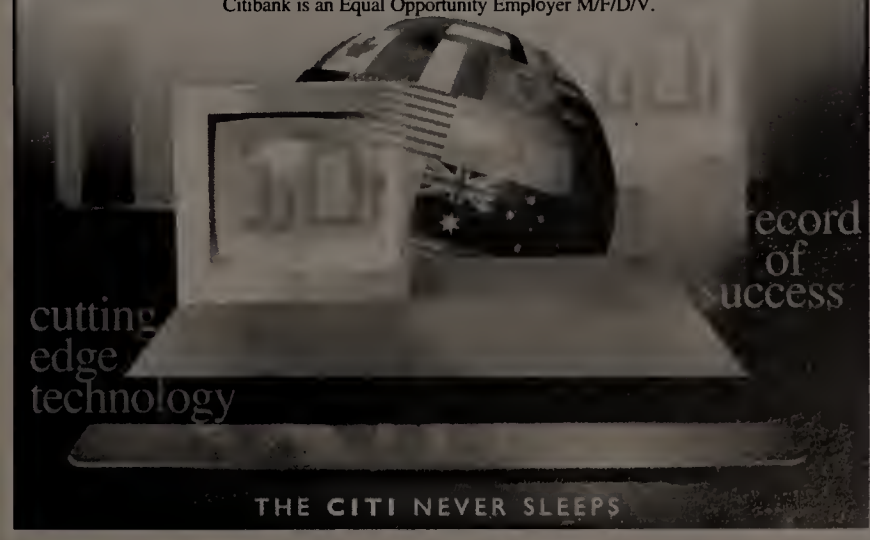

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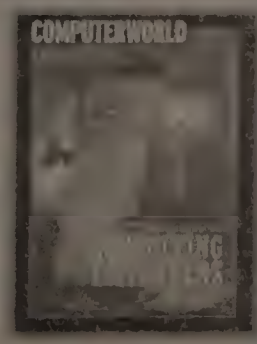

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The Week in Stocks

Gainers

PERCENT

ObjectShare, Inc. (H)	51.6
Radius Inc. (L)	48.0
Ross Systems, Inc.	22.8
Cayenne Software Inc.	15.7
Racotek Inc.	14.8
Silicon Graphics	11.2
Centura Software	10.6
Banyan Systems Inc.	9.6

DOLLAR

Yahoo! Inc. (H)	7.88
Xerox Corp. (H)	7.06
Lycos Inc. (H)	5.19
Excite, Inc.	4.81
Sapient Corp. (H)	2.13
Network Solution Inc	2.13
Arls Corp.	2.00
Gateway 2000 Inc.	1.81

Losers

PERCENT

Edify Corp.	-39.6
Egghead Discount Software	-15.0
Computer Horizons	-13.8
Business Objects	-13.7
Micron Technology	-11.5
Bay Networks Inc.	-10.8
Pegasus Systems (H)	-10.6
Micrel Semiconductor Inc.	-10.4

DOLLAR

Edify Corp.	-7.38
Computer Horizons	-7.00
Motorola Inc.	-6.19
Bell Atlantic Corp.	-6.19
Lucent Tech. (H)	-4.31
Cisco Systems Inc. (H)	-4.25
U S West Inc. (H)	-4.19
Micrel Semiconductor Inc.	-4.06

INDUSTRY ALMANAC

Playing hard to get?

There is a sense among market observers that Sprint Corp. (NYSE:FON) protests too much. Chairman William T. Esrey keeps denying that the company will be bought.

But analysts last week said the nation's third-largest long-distance carrier soon will figure in a merger.

"Usually when a company chief says that, it means he really is having talks about merging," says Eric Melloul, an analyst at Argus Research, Inc. in New York.

"Sprint has all the assets [such as wireless, long-distance and networking services] a lot of companies would like to have, so it's a good merger candidate," says Alan D. Barr, an analyst at PNC Asset Management Group, Inc. in Philadelphia.

Deals among voice and data carriers are common. There is the pending merger of Worldcom, Inc. (Nasdaq:WCOM) and MCI Communications Corp. (Nasdaq:MCIC). And Qwest Communications International, Inc. (Nasdaq:QWST) last month said it will join with LCI International, Inc. (NYSE:LCI) in a $4.4 billion deal.

Since the MCI/Worldcom deal was announced last fall, Sprint's stock has jumped from the 50s to 75-5/8 on March 20. "That run-up in price is the takeover value that Sprint represents with rumors it will be acquired," Melloul says.

Analysts give high ratings to Sprint's stock and predict it will continue to outperform the market average. But Barr says he is concerned that Sprint has to expand coverage for its Sprint PCS wireless digital service for cellular phone users and that the company hasn't moved aggressively enough in the past six months to address that need.

Still, Kansas City, Mo.-based Sprint has seen healthy growth. It reported nearly $15 billion in sales last year — a 7% increase from 1996. Sales of its data services increased by 70% last year, company officials say. — Matt Hamblen

SPRINT SOARING

Persistent merger rumors have boosted Sprint's stock

Exch	52-Week		Range	Apr. 9 2pm	Wk Net change	Wk Pct change
Communications and Network Services OFF -2.5%						
COMS	59.69	24.00	3 COM Corp.	32.31	-2.00	-5.8
AIT	50.25	27.63	AMERITECH Corp. (H)	46.94	-2.88	-5.8
ASND	60.00	22.00	Ascend Communications	40.56	1.25	3.2
T	68.50	30.75	AT & T	65.94	-0.38	-0.6
BNYN	6.50	1.19	Banyan Systems Inc.	6.09	0.53	9.6
BAY	41.88	15.63	Bay Networks Inc.	23.19	-2.81	-10.8
BEL	106.00	56.75	Bell Atlantic Corp.	96.88	-6.19	-6.0
BLS	68.69	39.38	Bellsouth Corp. (H)	66.56	-1.88	-2.7
BRKT	20.00	9.25	Brooktrout Technology (H)	19.13	-0.19	-1.0
CS	46.50	12.63	Cabletron Systems	13.69	-0.56	-3.9
CGRM	21.88	8.56	Centigram Communications	12.31	-0.81	-6.2
CSCO	71.94	30.19	Cisco Systems Inc. (H)	67.13	-4.25	-6.0
CMNT	6.13	3.31	Computer Network Tech.	4.44	-0.06	-1.4
CNCX	30.00	7.88	Concentric Network Corp. (H)	26.06	-0.69	-2.6
DIGI	32.75	16.50	DSC Communications	18.00	-1.06	-5.6
FORE	21.81	10.88	FORE Systems Inc.	18.00	0.81	4.7
GDC	9.50	3.25	General Datacomm Inds.	5.38	0.00	0.0
GSX	53.00	36.13	General Signal Networks	45.13	-1.44	-3.1
GTE	64.38	40.50	GTE Corp. (H)	59.94	-2.63	-4.2
LU	75.75	25.06	Lucent Tech. (H)	69.13	-4.31	-5.9
MADGF	9.19	3.25	Madge Networks NV	5.34	-0.16	-2.8
MCIC	51.00	27.31	MCI Communications Corp. (H)	49.81	-1.06	-2.1
NETM	5.25	2.09	NetManage Inc.	3.69	-0.22	-5.6
NTRX	3.00	0.63	Netrix Corp.	2.38	0.13	5.6
NCDI	14.50	5.88	Network Computing Devices	9.88	-0.69	-6.5
NWK	22.38	11.25	Network Equipment Tech.	18.63	1.06	6.0
NN	69.38	18.94	Newbridge Networks Corp.	27.25	0.63	2.3
NT	66.44	31.06	Northern Telecom Ltd. (H)	61.19	-3.50	-5.4
NOVL	11.13	6.28	Novell Inc.	9.66	-0.66	-6.4
ODSI	16.50	5.19	Optical Data Systems Inc.	5.69	-0.25	-4.2
PCTL	14.13	5.63	Picturetel Corp.	6.19	-0.63	-9.2
PTON	3.50	0.97	Proteon Inc.	1.13	-0.09	-7.7
RACO	4.13	1.00	Racotek Inc.	3.88	0.50	14.8
RADS	29.38	7.00	Radiant Systems Inc	22.13	-0.88	-3.8
VRTL	7.62	3.37	Retix (L)	5.88	0.13	2.2
SBC	46.56	24.63	SBC Communications	41.69	-2.44	-5.5
SFA	24.94	14.00	Scientific Atlanta Inc.	18.56	-0.81	-4.2
SHVA	16.44	8.06	Shiva Corp.	9.94	-0.06	-0.6
FON	75.63	42.25	Sprint Corp.	67.44	-1.00	-1.5
QWST	41.06	13.19	QWest Communications	35.75	-3.13	-8.0
SMSC	18.13	8.00	Standard Microsystems Corp.	9.44	-0.19	-1.9
USW	58.00	31.13	U S West Inc. (H)	53.81	-4.19	-7.2
XIRC	18.75	7.50	Xircom	14.56	0.00	0.0
XYLN	28.50	12.38	Xylan Corp. (H)	26.44	-0.75	-2.8
PCs and Workstations					**UP 0.2%**	
AAPL	29.56	12.75	Apple Computer Inc.	25.44	-1.50	-5.6
CPQ	39.75	14.25	Compaq Computer Corp.	24.56	-1.38	-5.3
DELL	71.94	17.25	Dell Computer Corp.	67.81	0.19	0.3
GTW	48.75	19.38	Gateway 2000 Inc.	46.69	1.81	4.0
HWP	72.94	48.13	Hewlett Packard Co.	60.94	-1.69	-2.7
MUEI	25.38	8.44	Micron International Inc.	13.94	0.06	0.5
NIPNY	74.00	48.63	NEC America	53.38	1.50	2.9
SGI	30.31	10.94	Silicon Graphics	15.56	1.56	11.2
SUNW	53.31	25.88	Sun Microsystems Inc.	39.81	-1.44	-3.5
Large Systems					**OFF -3.7%**	
DGN	37.94	13.38	Data General Corp.	17.31	-1.44	-7.7
DEC	62.63	25.00	Digital Equipment Corp.	51.69	-1.31	-2.5
IBM	113.50	65.75	IBM	106.06	1.25	1.2
MDCD	5.75	2.88	Meridian Data Inc.	4.06	-0.31	-7.1
NCR	43.38	25.63	NCR Corp	32.63	-1.94	-5.6
PRCM	18.63	6.75	ProCom Technology, Inc. (L)	7.56	-0.41	-5.1
SQNT	31.25	14.63	Sequent Computer Sys.	18.13	-0.75	-4.0
TEXM	6.00	2.19	Texas Micro Inc	3.75	0.00	0.0
SRA	60.75	30.38	Stratus Computer Inc.	43.13	-2.63	-5.7
UIS	20.19	5.75	Unisys Corp.	18.81	-0.06	-0.3
Software					**UP 0.6%**	
ADBE	53.13	33.50	Adobe Systems Inc.	45.38	-1.50	-3.2
AMSWA	15.63	5.38	American Software Inc.	8.06	0.19	2.4
APLX	12.50	3.13	Applix Inc.	5.88	-0.25	-4.1
ARSW	53.25	17.00	Arbor Software	45.56	-2.56	-5.3
ARDT	15.13	5.88	Ardent Software	15.00	1.13	8.1
ARSC	32.50	17.75	Aris Corp.	31.75	2.00	6.7
ADSK	51.13	28.88	Autodesk Inc.	42.38	-2.56	-5.7
BMCS	86.75	39.63	BMC Software Inc.	83.13	-2.25	-2.6
BOOL	25.69	13.13	Boole and Babbage	24.00	-0.25	-1.0
BORL	12.19	5.88	Borland Int l Inc.	8.94	-0.34	-3.7
BOBJY	16.75	6.63	Business Objects	13.75	-2.19	-13.7
CAYN	4.25	0.94	Cayenne Software Inc.	3.00	0.41	15.7
CNTR	3.75	0.88	Centura Software	1.63	0.16	10.6
CHKPF	50.50	18.34	Checkpoint Software	40.50	-2.38	-5.5
COGNF	35.00	17.63	Cognos Inc.	28.75	1.63	6.0
CA	58.63	27.00	Computer Associates	56.88	1.75	3.2
CPWR	51.25	15.88	Compuware Corp.	47.44	-1.56	-3.2
CSRE	14.63	4.25	Comshare Inc.	7.75	-0.06	-0.8
COSFF	6.75	1.40	Corel Corp.	2.75	0.09	3.5
DWTI	5.38	2.13	Dataware Technologies Inc.	3.81	0.19	5.2
FILE	50.63	10.50	Filenet Corp.	48.69	0.19	0.4
FRTE	23.75	4.94	Forte Software	7.75	-0.38	-4.6
FTPS	6.38	1.50	FTP Software Inc.	2.94	-0.03	-1.1
GPSI	39.63	20.38	Great Plains Software, Inc	37.75	-1.25	-3.2
HUMCF	54.25	22.00	Hummingbird Comm. Ltd.	34.75	0.75	2.2
HYSW	46.25	13.00	Hyperion Software Corp. (H)	44.75	0.00	0.0
IRIC	20.00	11.75	Information Resources	16.06	-0.19	-1.2
IFMX	12.44	4.00	Informix Corp.	8.50	-0.31	-3.5
INGR	14.19	6.25	Intergraph Corp.	7.88	0.00	0.0
LEAF	4.00	0.81	Interleaf Inc.	2.81	-0.06	-2.2
ISLI	21.25	6.25	Intersolv Inc.	16.75	-0.50	-2.9
INTU	53.25	21.25	Intuit Inc.	48.75	-0.50	-1.0
JDEC	40.63	24.88	J.D. Edwards Co.	38.56	1.69	4.6
TLC	26.19	5.50	Learning Co. (The) (H)	26.19	1.19	4.8
LGWX	14.63	4.13	Logic Worxs	14.19	0.94	7.1
MAPS	14.25	7.88	MapInfo Corp.	13.00	0.88	7.2
MATH	4.63	2.19	MathSoft	4 16	0.03	0.8
MENT	13.13	6.50	Mentor Graphics	10.31	0.25	2.5
MIFGY	60.63	19.63	Micro Focus	45.38	-1.75	-3.7
MGXI	14.00	4.50	Micrografx Inc.	13.31	-0.19	-1.4
MSFT	93.06	46.69	Microsoft Corp. (H)	89.31	-3.06	-3.3
OBJS	4.50	0.44	ObjectShare, Inc. (H)	4.50	1.53	51 6
OMTL	15.00	8.25	Omtool Ltd	12.50	0.38	3.1
ORCL	42.13	17.75	Oracle Corp.	26.81	-1.88	-6.5
PMTC	34.88	18.75	Parametric Technology	30.63	-2.63	-7.9
PSFT	56.56	15 31	Peoplesoft (H)	52.00	-3.50	-6.3
PTEC	18 38	11.00	Phoenix Technologies	12.13	0.19	1.6
PSQL	25.00	6.50	Platinum Software	21.13	-0.31	-1.5
PLAT	31.13	10.50	Platinum Technology	24.94	1.31	5.6
PRGS	32 13	15.63	Progress Software Corp.	31.50	0.75	2.4
RNBO	30.00	13.75	Rainbow Technologies Inc.	27.13	-1 00	-3.6
REDB	11.63	5.00	Red Brick Systems Inc.	5 94	0 00	0.0
ROSS	5.13	1.75	Ross Systems, Inc.	3.88	0.72	22.8
SAPE	50.75	16.50	Sapient Corp. (H)	49.75	2 13	4 5
SCOC	7.25	3.13	SCO Inc	4 56	-0.31	-6 4
SDTI	44 38	25.00	Security Dynamics Tech.	27 19	-0 38	-1.4

Exch	52-Week		Range	Apr. 9 2pm	Wk Net change	Wk Pct change
SOTA	22.25	8.88	State of the Art	22.25	0.00	0.0
SSW	28.88	13.94	Sterling Software Inc. (H)	26.81	1.72	6.0
SDRC	30.00	15.25	Struct. Dynamics Research	27.19	-0.16	-0.6
SYBS	23.63	6.88	Sybase Inc.	8.75	-0.56	-6.0
SYMC	29.50	12.00	Symantec Corp.	27.88	-0.06	-0.2
SNPS	47.13	23.00	SynOpsys	31.13	-1.81	-5.5
SSAX	17.63	3.88	System Software Assoc.	8.06	0.44	5.7
SYSF	14.50	3.00	Systemsoft Corp.	3.75	-0.06	-1.6
BAANF	50.25	21.50	The Baan Co.	47.13	-0.13	-0.3
TRUV	5.19	1.50	Truevision Corp.	2.34	-0.16	-6.3
VSIO	48.13	19.13	Visio Corp.	41 50	-4.00	-8.8
WALK	20.44	11.13	Walker Interactive Systems	20.00	0.94	4.9
WALL	29.13	11.31	Wall Data Inc.	14.75	0.13	0.9
WANG	32.25	16.00	Wang Laboratories Inc.	28.81	-2.81	-8.9
Internet						
AMZN	96.75	15.75	Amazon.com	94.50	-0.19	-0.2
AOL	75.56	21.00	America On-Line	74.13	-0.19	-0.3
ATHM	38.13	16.63	At Home Corp.	32.38	-1.81	-5.3
EDFY	22.13	8.88	Edify Corp.	11.25	-7.38	-39.6
XCIT	60.81	7.50	Excite, Inc.	60.81	4.81	8.6
SEEK	22.88	4.38	Infoseek Corp.	22.25	0.88	4.1
LCOS	65.00	11.19	Lycos Inc. (H)	65.00	5.19	8.7
NSCP	49.50	14.88	Netscape Comm. Corp.	17.19	0.13	0.7
NSOL	41.88	11.75	Network Solution Inc	41.88	2.13	5.3
OMKT	21.38	6.50	Open Market Inc.	20.94	0.69	3.4
PEGS	28.50	12.50	Pegasus Systems (H)	25.25	-3.00	-10.6
PSIX	12.88	4.25	PSINet	12.88	0.50	4.0
QDEK	3.50	1.19	Quarterdeck Corp.	1.50	-0.16	-9.4
SCUR	15.25	5.00	Secure Computing Corp.	12.56	-0.44	-3.4
SPYG	12.00	4.06	Spyglass Inc.	9.00	-0.06	-0.7
YHOO	110.00	16.63	Yahoo! Inc. (H)	110.00	7.88	7.7
Semiconductors						
AMD	45.75	17.13	Advanced Micro Devices	27.25	-1.63	-5.6
ADI	36.69	22.75	Analog Devices Inc.	34.13	-0.44	-1.3
CRUS	17.75	8.00	Cirrus Logic	9.72	-0.34	-3.4
CY	18.94	7.38	Cypress Semiconductor Corp.	9.44	-0.63	-6.2
INTC	102.00	64.13	Intel Corp.	74.00	-2.63	-3.4
LSCC	74.50	39.75	Lattice Semiconductor	48.38	-2.63	-5.1
LSI	46.88	18.63	LSI Logic Corp.	25.56	-1.25	-4.7
MCRL	46.88	16.13	Micrel Semiconductor Inc.	35.13	-4.06	-10.4
MU	60.06	22.00	Micron Technology	27.81	-3.63	-11.5
MOT	90.50	52.00	Motorola Inc.	53.94	-6.19	-10.3
NSM	42.88	19.50	National Semiconductor	21.81	1.31	6.4
RMBS	86.75	26.88	Rambus Inc	45.00	-0.25	-0.6
TXN	71.25	39.56	Texas Instruments	52.38	-3.50	-6.3
VLSI	38.69	17.06	VLSI Technology	18.38	-1.38	-7.0
XLNX	58.50	28.50	Xilinx	39.31	1.06	2.8
Peripherals and Subsystems						
ADPT	54.25	19.06	Adaptec Inc. (L)	19.69	-0.56	-2.8
APCC	34.38	15.25	American Power Conversion	29.44	-0.56	-1.9
CREAF	29.38	11.50	Creative Technology Ltd.	22.75	-0.38	-1.6
RACE	16.75	1.44	Data Race Inc.	1.59	-0.09	-5.6
DTM	13.13	7.88	Dataram Corp.	11.75	-0.88	-6.9
EMC	40.75	16.19	EMC Corp. (H)	36.75	-2.06	-5.3
EMLX	21.25	8.00	Emulex Corp.	8.88	-0.50	-5.3
ESCC	35.88	22.13	Evans and Sutherland	27.19	-2.38	-8.0
EXBT	16.50	5.63	Exabyte	8.75	-0.13	-1.4
IISLF	1.88	0.78	Intelligent Info. Systems	0.88	-0.03	-3.4
IOM	16.75	6.31	Iomega Corp. (L)	6.56	-0.31	-4.5
IPLS	2.81	0.94	IPL Systems Inc.	2.00	0.00	0.0
KMAG	35.38	11.75	Komag Inc.	13.81	-0.50	-3.5
MTSI	34.88	13.00	Micro Touch Systems Inc.	18.38	-1.38	-7.0
MTIC	17.88	3.69	MTI Technology Corp.	16.13	-0.50	-3.0
AQM	23.06	2.25	QMS Inc.	4.13	-0.25	-5.7
QNTM	43.25	17.75	Quantum Corp.	21.50	-1.50	-6.5
RDUS	8.12	1.87	Radius Inc. (L)	4.63	1.50	48.0
SEG	54.25	17.75	Seagate Technology	24.19	-1.94	-7.4
SOS	14.38	5.00	Storage Computer Corp.	6.50	-0.56	-8.0
STK	79.81	33.25	Storage Technology (H)	78.00	-1.00	-1.3
TEK	48.19	33.69	Tektronix Inc.	42.44	-0.81	-1.9
WDC	54.75	14.50	Western Digital Corp.	18.38	-0.25	-1.3
XRX	114.38	54.75	Xerox Corp. (H)	111.75	7.06	6.7
Services						
AMSY	30.00	17.63	American Mgmt. Systems	27.75	1.38	5.2
ANLY	36.50	15.19	Analysts Int l	28.88	-0.94	-3.1
AUD	70.69	26.56	Auto Data Processing	65.31	-2.31	-3.4
CATP	53.00	22.25	Cambridge Tech. Partners (H)	50.38	-0.63	-1.2
CEN	57.50	29.50	Ceridian Corp. (H)	54.06	-1.31	-2.4
CDO	44.13	18.88	Comdisco Inc.	42.25	-1.75	-4.0
CPU	38.00	16.25	CompUSA Inc.	19.19	-1.00	-5.0
CHRZ	53.50	21.75	Computer Horizons	43.75	-7.00	-13.8
CSC	56.75	28.94	Computer Sciences	52.69	-1.75	-3.2
TSK	49.38	19.38	Computer Task Group	35.25	-3.25	-8.4
EGGS	12.75	3.63	Egghead Discount Software	8.88	1.56	15.0
EDS	50.88	29.56	Electronic Data Systems Corp.	44 13	-1.19	-2.6
ICO	39.63	19.75	Inacom Corp.	27.81	0.44	1.6
INEL	7.50	2.25	Intelligent Electronics	7.38	0.03	0.4
KEA	57.50	15.06	Keane Inc.	52.63	-3.63	-6.4
MICA	29.75	10.06	Microage Inc.	13.13	-1.50	-10.3
PAYX	59.75	27.25	Paychex	58.06	-0.19	-0.3
PMS	80.69	43.00	Policy Management Sys.	75 56	-3.81	-4.8
REY	24.88	13.75	Reynolds and Reynolds	23.06	0.94	4.2
SCBI	29.50	10.69	SCB Computer Tech. Inc. (H)	25.50	-0.88	3.3
SEIC	71.00	18.75	SEI Corp.	67.00	-2.44	-3.5
SMS	82.69	36.75	Shared Medical Systems	79.38	-1.88	-2 3
SSPE	24.25	10.00	Software Spectrum Inc.	20.13	-2.25	-10.1
SDS	38.88	20.75	Sungard Data Systems (H)	38.38	0.00	0.0
VST	17.25	6.50	VanStar Corp.	11.88	-0.50	-4.0

* The market was closed Friday, April 10, in observance of Good Friday.

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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Deal to create financial juggernaut

CONTINUED FROM COVER 1

ing cross-selling a reality. But according to analysts, both companies have historically failed to persuade their business units to share proprietary customer data for that purpose.

Complicating matters is the probability that Citicorp and Travelers will continue to operate as separate organizations, even though both companies — at least for the near term — have been moving toward Windows NT-based architectures, analysts said. Even so, they will be hard-pressed to make an integrated model work unless it is driven by senior management.

Citigroup's co-chairmen, Sanford I. Weill, now chairman of Travelers, and John S. Reed, chairman of Citicorp, had better fuel up.

FINANCIAL JUGGERNAUT

Regulatory approval of the newly renamed Citigroup, Inc. would create the world's largest financial services company, unrivaled in its breadth of product offerings, ranging from mutual funds to automobile insurance.

Unlike other financial services mergers that have been driven primarily by cost savings, such as the 1996 combination of The Chase Manhattan Corp. and Chemical Banking Corp., the Citicorp/Travelers deal is more about creating a global financial services juggernaut.

For example, in the merged company, Travelers' Salomon Smith Barney financial consultants ideally could sell mutual funds and auto insurance to Citicorp banking customers. And Citicorp could offer home equity loans and credit-card services to Travelers' insurance clients.

Whether Citigroup can actually integrate information between, say, its consumer banking and investment banking businesses "is the big question mark," said Larry Tabb, an analyst at The Tower Group in Newton, Mass., and former head of back-office operations at Citicorp's U.S. government securities unit in the mid-1980s.

Take, for example, Travelers' $1 billion acquisition of Shearson Lehman Brothers' brokerage from American Express Co. in 1993 and last year's $9 billion takeover of Salomon, Inc. Promises of abundant cross-selling opportunities between Travelers' insurance unit and the two Wall Street brokerages continue to go unmet, Tabb said.

Add to that the fact that Citicorp "has struggled for years," he said, to integrate disparate systems from each of its businesses to cross-sell investment services to its credit-card customers, for example.

AT A GLANCE

Citicorp

Business: Banking, credit cards
Headquarters: New York
Assets: $311B
1997 net income: $3.6B
1997 revenue: $23.3B
IS budget: $2.14B
IS staff: 9,000

The Travelers Group

Business: Insurance
Headquarters: New York
Assets: $387B
1997 net income: $3.1B
1997 revenue: $37.6B
IS budget: $1.8B*
IS staff: 7,000*

*Includes Salomon Smith Barney

Tabb attributed that problem to the bank having had such a decentralized IS structure and the fact that each business unit has been able to get the job done by itself.

But to effectively merge customer data between Citicorp and Travelers, "you'd have to stop the business for three years," said Bill Burnham, a senior analyst at Piper Jaffray Cos. in Minneapolis. Such an effort would require Citicorp and Travelers either to consolidate platforms and move to each company's top systems or to build a global middleware layer that ties together each company's disparate systems, he said.

At the very least, Citigroup will need to exploit middleware technologies that "loosely couple" the companies' respective systems while establishing a series of data marts across each of the businesses, said Octavio Marenzi, director of research at Meridien Research, Inc., a Newton, Mass.-based financial services consultant. Executives at both companies declined to be interviewed.

A Citicorp spokeswoman said a transition team will be assembled over the next month charged with bringing the companies' businesses together.

NETWORK PROJECT

Two concurrent Citicorp projects may help ease the systems integration strain. Last month, Citicorp awarded AT&T Solutions a $750 million contract to consolidate 11 X.25 global networks into a single IP-based, frame-relay network [CW, March 23].

The network project is critical in helping Citicorp meet its lofty goal of reaching 1 billion customers by 2010. Through a project referred to internally at Citicorp as the "big, hairy audacious goal," the bank hopes to establish electronic relationships with credit-card, smart-card and other types of customers, said Edward Horowitz, corporate executive vice president of advanced development at Citicorp.

Citicorp this year is also rolling out a global Windows NT-based operating system designed to tie together all of its disparate legacy systems, Horowitz said.

But it is unclear how tightly integrated Citicorp's legacy systems will be under the NT umbrella and whether Travelers' business units can be drawn into it. Moving to an IP backbone "is not going to solve any of their [systems integration] problems in any substantive way," Marenzi said.

Still, at least one former Reed lieutenant said he likes his former boss's chances for making this work. Reed "really has an excellent sense for brand advertising and technology working together, which is lacking in most senior executives of his age and caliber," said Steve Cone, president of customer marketing and development at Fidelity Investments in Boston. He worked at Citicorp under Reed in the early 1990s (see story at right). □

Megamerger fallout

Last week's gargantuan merger proposal between Citicorp and The Travelers Group, both based in New York, is expected to help push lawmakers into removing the final barriers that prevent full-fledged unions among banks, brokerages and insurance companies, currently mandated under the Depression-era Glass-Steagall Act. Here are some other key issues behind the megamerger:

Deal of the century

The $77.6 billion marriage between Citicorp and Travelers is the biggest merger ever, nearly twice as large as the pending $41.9 billion merger between WorldCom, Inc. and MCI Communications Corp.

Big Bank theory

Renamed Citigroup, the merged entity will become the world's largest financial services company with $698 billion in assets, ahead of Tokyo Mitsubishi ($691 billion) and more than twice the size of The Chase Manhattan Bank Corp. ($336 billion).

IT impact

Executives from Citicorp and Travelers haven't discussed integration issues. Most analysts expect the two companies to run their respective businesses independent of each another, at least for the first year or two. Each organization is expected to keep its separate focus on year 2000 and European monetary unit conversion projects.

Regulatory hurdles

The Citicorp/Travelers deal will have to gain approval from a host of U.S. and international regulatory authorities, including the Securities and Exchange Commission and the Federal Reserve Bank. Analysts praised company officials for seeking and obtaining approval on the merger from banking regulators and government officials, including Federal Reserve Chairman Alan Greenspan.

— Thomas Hoffman

SOURCES: THE TOWER GROUP, NEWTON, MASS.; *COMPUTERWORLD*; COMPANY REPORTS

Pact will attract government interest

By Thomas Hoffman

FEW ANALYSTS expect the Citicorp/The Travelers Group deal to get bogged down by antitrust concerns because there is very little overlap between the two companies' primary business lines — with the exception of the fixed-income trading operations between Citicorp and Salomon.

But the so-called merger of equals, which stretches from insurance to consumer deposits, will likely be heavily scrutinized by domestic and international watchdogs such as the Securities and Exchange Commission, the Federal Reserve Bank and state insurance regulators, analysts said.

After those agencies get through with Citigroup, the merged companies' sales desks and software applications "might look like a minefield with all the different disclosure warnings on them" as to what products salespeople are allowed to sell to clients, said Bill Burnham, a senior analyst at Piper Jaffray Cos. in Minneapolis.

Most financial services firms are organized by vertical product lines — 401(k) plans, credit cards, mortgage loans — with salespeople devoted to particular products.

Given the size of the merger, it is likely that either the Department of Justice or the Federal Trade Commission "will look at the deal," said a spokesman for the DOJ.

A spokesman for the Federal Reserve Bank in Washington said the agency hadn't received a merger application from Citicorp/Travelers as of April 9 and couldn't comment on the likelihood of approval. □

CITICORP/TRAVELERS MERGER

Reed shifts from programmer to CEO

▸ *Executive lauded for making bank a technology leader*

By Kim S. Nash

MOST PEOPLE THINK of Citicorp CEO John Reed as somewhat reclusive. He is certainly cerebral. The MIT graduate and former member of the U.S. Army Corps of Engineers would rather grab a science text than the limelight.

But a 33-year climb from Citicorp programmer to Citicorp CEO means he is also a doer, even daring at times.

And it is his strong belief in technology that most separates Reed from other bank chiefs.

Just as Reed, 59, overcame dyslexia to become a voracious reader, he also fought off two other contenders for the CEO post he got in 1984. He has been fighting conventional wisdom ever since.

For example, his decision in the late 1980s to aggressively market to individual consumers instead of relying mainly on big corporate accounts for growth made "a huge impact" not only at Citicorp but industrywide, said Larry Tabb, an analyst at Tower Group, Inc.

"He was the first of the major bankers to realize there was a lot of money to be made on [the consumer] side," Tabb said. "It was a very gutsy move."

THE ASSOCIATED PRESS

One Citicorp executive says of John Reed (above): "He's comfortable with people, but no one would ever call him jolly."

As a 31-year-old applications manager, Reed led a project in 1970 to automate Citicorp's back-office processing that, according to the bank, laid the foundation for its entire information systems structure.

His work was immortalized in a 1975 Harvard Business School case study. That same year, he was put in charge of creating Citicorp's automated teller machine applications and other electronic products.

RISE THROUGH THE RANKS

Reed rose through the consumer business unit at Citicorp, taking technology know-how along with him.

"Since John has been there, [Citicorp has become] the technology leader in banking worldwide," said Steve Cone, who worked under Reed at Citicorp for two years. Cone is now a senior executive at Fidelity Investments in Boston.

Reed declined to be interviewed for the story. But when he does speak in public — very selectively — no speech writers or public relations people tell him what to say. For example, Reed writes the company's annual report letter himself, said Jack Morris, director of media relations at Citicorp. "He doesn't even like us to correct punctuation."

Reed appeared last Tuesday on CNN, saying it would be his last interview about the surprise announcement of Citicorp's $76.7 billion merger with The Travelers Group, Inc. Afterward, Reed, Travelers CEO Sandy Weill and their wives celebrated with dinner at Le Cirque in New York.

But after the mutual backpatting ends, Reed will face the hairy job of co-commanding the merged entity, to be renamed Citigroup, Inc.

Observers have already begun to question whether two powerful men used to doing things their own way can make an effective team.

"There's so much at stake that they will work together for some period of time — one to two years," Cone speculated. "John can get along with anyone if he wants to."

In the meantime, there will be no avoiding that pesky limelight. □

SHINING MOMENTS

Samples of projects that have earned Citicorp and Travelers reputations as technology innovators

CITICORP

Mid-1970s

- First major bank to provide automated teller machines
- Among the first to computerize all back-office functions to create a data processing "factory"

1998

- Is upgrading global network to IP and frame relay to allow electronic commerce and home banking in 98 countries
- Worldwide rollout of Windows NT to be finished by year's end

TRAVELERS

1998

- One of the first major insurers to offer policy quotes and car insurance online
- Used Java to let customers access 401(k) records via the Internet

SALOMON SMITH BARNEY*

Early 1990s

- Among the first investment banks to use Unix for trading systems

Next month

- Plans to be one of the first on Wall Street to use satellites to stream video to brokers' desktops

**Subsidiary of The Travelers Group*

Cabletron will unload one-two punch at show

▸ *Vendor to promote Layer 3, address cost issues*

By Bob Wallace

AT NEXT MONTH'S Networld/Interop '98 show, Cabletron Systems, Inc. will address two of its biggest challenges: boosting deployment of Layer 3 switching and eliminating user concerns about the vendor's high product prices.

Enhancements to Cabletron's Layer 3 switches are intended to expand usage of the advanced routing switches, which can reduce costs and improve network performance for users.

NETWORLD+INTEROP'98
www.interop.com

And the debut of two low-priced LAN switches was designed to directly address widespread user displeasure with prices that even Cabletron has acknowledged are unrealistic [CW, Jan. 19].

Use of Layer 3 switches has been limited because they lack wide-area networking support, and most can't handle protocols beyond IP. Cabletron plans to add T1 and T3 WAN interfaces and routing software that will support legacy protocols.

SETH AFFOUMADO

Wake Forest University's Ron Rimmer: "The pricing looks promising"

"These enhancements definitely make Layer 3 switching more appealing to us," said Eric Martin, lead LAN/WAN engineer at Harley-Davidson Motor Co. in York, Pa.

"Legacy protocol support is important because IPX is one of our main protocols, and we still have some AppleTalk and NetBIOS," Martin said. "WAN interfaces would let us connect switches in seven Milwaukee-area buildings to form a metropolitan-area network."

The routing software for the Layer 3 switch is the result of Cabletron's purchase of Digital Equipment Corp.'s network products business last year.

Michael Leland, director of telecommunications product marketing at Cabletron, told *Computerworld* that the Digital routing software will be added to many Cabletron products starting this summer.

On the pricing front, Cabletron is promising new versions of its chassis-based SmartSwitch 6000 workgroup switch and its SmartSwitch 2000 desktop 10M/100M bit/sec. switch. The new models will have more ports, but lower prices than their predecessors.

Cabletron CEO Craig Benson pledged two weeks ago that those switches will make the company a low-cost provider, but the company wouldn't divulge pricing.

"To lead the market price-wise, the new SmartSwitch 2000 needs to have a $120 to $150 price per port, while the new version of the SmartSwitch 6000 needs to be priced at $175 to $250 per port," said John Morency, vice president at Renaissance Worldwide, Inc., a consulting and research firm in Newton, Mass.

Ron Rimmer knows but won't divulge pricing for the two new switches.

"I'm very excited because the pricing looks very promising," said Rimmer, network manager at Wake Forest University in Winston-Salem, N.C. He said he expects Cabletron's list prices for existing products also to come down.

Cabletron also is mulling the acquisition of at least one virtual private network equipment maker that would bring it a stand-alone firewall, IP security and tunneling functionality later this year, Leland said.

And the vendor plans to build certain virtual private network functionality in to a module that can be inserted into the company's SmartSwitch 9000 data center switch and its SmartSwitch 6000 wiring closet switch. □

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

Patent watch

Recently issued U.S. patents (number, inventor/assignee, date)

Forest surveillance system for early detection and analysis of forest fires. Data from remote sensors, video cameras and weather reports are transmitted to a control center that displays alarms on digital maps. (5,734,335, Finmeccanica SpA, Rome, March 31)

Environmentally controlled computer and display for locomotives. It protects the computer, interface and connections from harsh locomotive environments such as extreme temperatures and electrical noise. (5,734,989, New York Air Brake Corp., Watertown, N.Y., March 31)

A four-dimensional, mathematical model for tracking the relationships among the characters, theme, plot and perspective in a dramatic screenplay. (5,734,916, Screenplay Systems, Inc., Burbank, Calif., March 31)

Source: MicroPatent (*www.micropat.com*)

BLOCKBUSTER WEB SITE, TOO

The Oscar-winning movie *Titanic*'s Web site (*www.titanicmovie.com*) has logged more than 434 million hits, setting a movie Web site record. Web host WorldSite Networks in Beverly Hills, Calif., says it uses a dedicated T3 port to avoid sinking under the traffic, which averages 5 million hits per day.

Law of unintended consequences

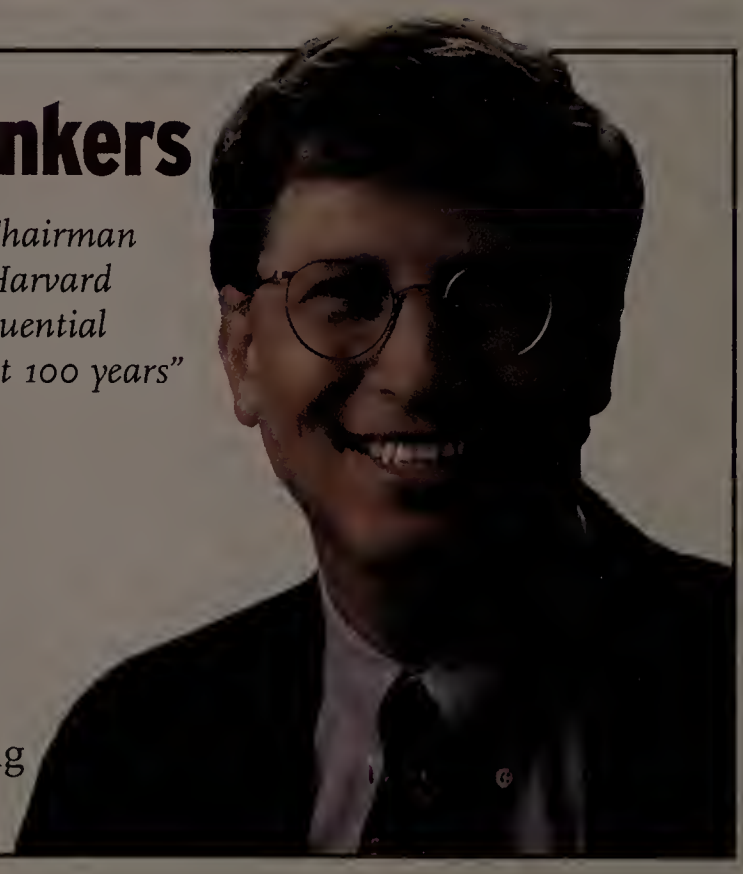
Universities find that distance learning programs – intended for people in the hinterlands – are immensely popular with on-campus students, reports the *Chronicle of Higher Education*. About 80% of the State University of New York's online students live on campus. At Arizona State University, only 3% live out-of-state.

The Big Thinkers

Executives say Microsoft Chairman and CEO Bill Gates – a Harvard dropout – is the "most influential business thinker in the past 100 years"

1. Bill Gates
2. Peter Drucker
3. Henry Ford
4. Jack Welch
5. Alfred P. Sloan
6. W. Edwards Deming

Base: Survey of 409 U.S. senior executives



Source: Deloitte & Touche LLP, Wilton, Conn.

Inside Lines

The Perils of Pokey, part II

Remember the recent flap surrounding 12-year-old Chris "Pokey" Van Allen and his tussle with the Prema Toy company over the *www.pokey.org* Internet domain name? Well, make way for the King of Tongo, who just weighed in from his island in the South Pacific (we are not making this up) to offer the domain name of *www.pokey.to* "for free and forever" to Chris. The Pennsylvania preteen didn't realize he was headed for a trademark protection spat with the creators of Gumby and Pokey when he set up his personal site. Since then, he has received thousands of supportive E-mails from around the world.

The Unsinkable Ellen Hancock

Industry veteran Ellen Hancock has resurfaced following her less-than-triumphant exit last year as chief technology officer at Apple Computer. Last month, Hancock was named president of Exodus Communications, a Santa Clara, Calif.-based Internet data center where Fortune 100 companies can locate backup Web servers.

More than a token gesture

At the Networld/Interop '98 show next month, IBM will announce adapter cards, hubs and switches that support Token Ring at 100M bit/sec. The move was designed to breathe life into the LAN technology, said sources close to IBM who requested anonymity. IBM also will detail its plans for high-speed Token Ring as far as next year. The products will ship by year's end, which is when a standard for 100M bit/sec. Token Ring is expected to be completed.

SGI renders turnaround plans

Expect to hear a lot of Wintel talk from Silicon Graphics CEO Rick Belluzzo this week when he outlines his turnaround plan in New York. Belluzzo is slated to unveil plans to deliver a sub-$10,000, high-powered Wintel workstation with SGI's graphics engines; move SGI's product line from MIPS microprocessors to Intel chips; and formally announce the spin-off of its MIPS microprocessor business unit into a separate company.

Executive privilege – not

William Malik, a vice president at Gartner Group in Stamford, Conn., used to work at IBM. In the early 1990s, Malik told attendees at a security conference last week, then-executive vice president James Cannavino issued an executive order mandating that employees display corporate identification badges at all times. One day, Malik spied a badgeless man who turned out to be Cannavino. Malik said, "Hey, who are you, and where's your badge?" Cannavino said, "Thanks for reminding me," took out his badge and handed Malik a $50 bill, Malik said.

Throw the past away

It isn't every chief information officer who has to make the call to turn off the mainframe applications he himself wrote 20 years ago. But Dennis Miller, CIO at Memorial Healthcare System in Hollywood, Fla., is such a CIO. The hospital group just replaced its mainframe-based finance and human resources systems with packaged software. "Most of those applications have my name on them," said Miller, who wrote them as an outside programmer and then became CIO in 1985. Turning them off "was sad, but you have to move on," he said.

With little fanfare, Microsoft recently found and posted a fix for a year 2000 glitch in the Windows 95 file manager that shows an incorrect date for year 2000 dates or later. According to Ed Muth, a Microsoft group product manager, users who suspect they have the problem can get a free download of the Windows 95 OEM Server Release 2. Go to the Winfile.exe Version 4.00.951 and install it. If you have news tips or information to use, you can get in touch with news editor Patricia Keefe at patricia_keefe@cw.com or give her a call at (508) 820-8183.

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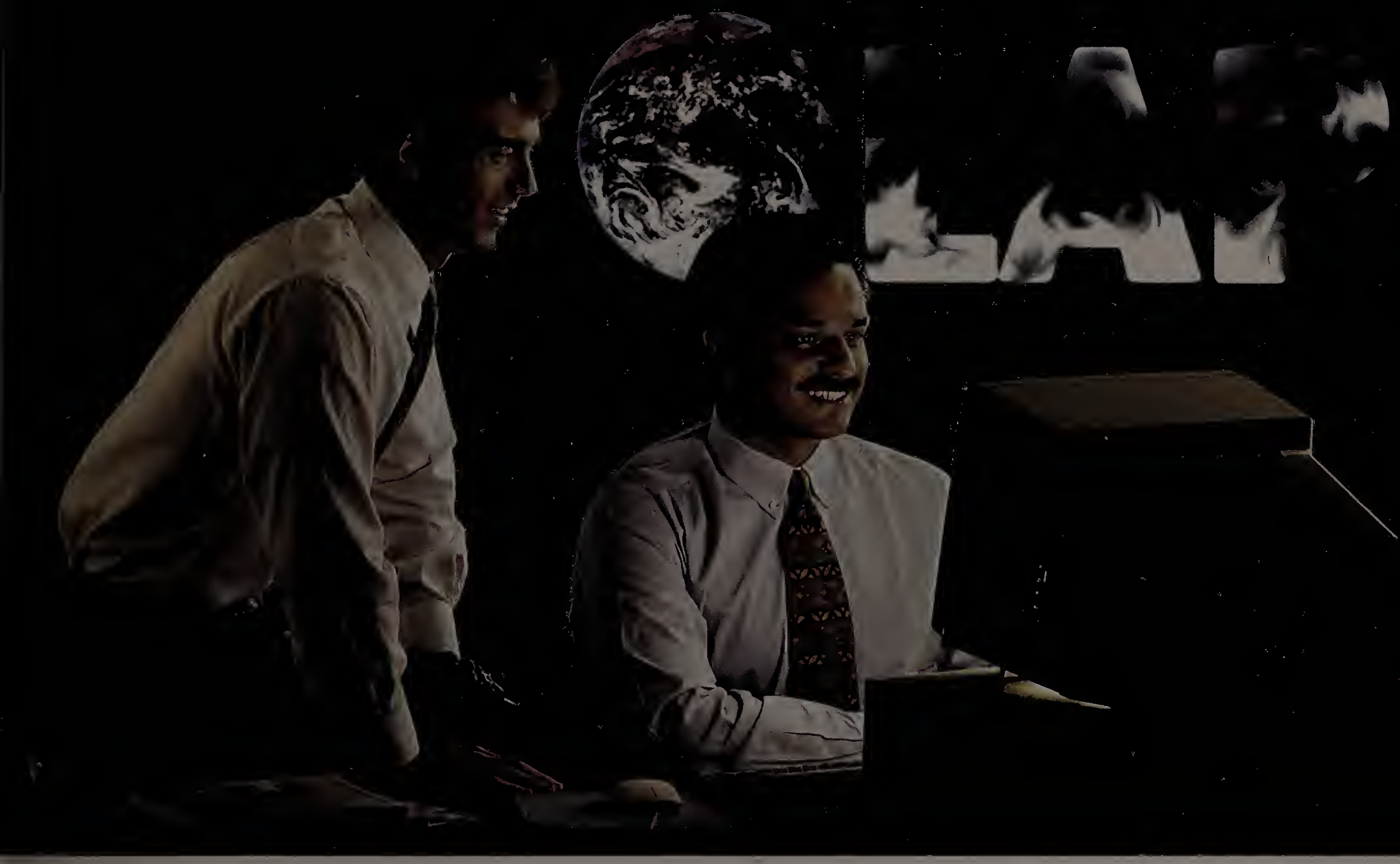

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